User Manual V1.02

JCIMA-P2 Multi-Function

Passive Intermodulation Analyzer

Jointcom Communication Technology Co., Ltd

August 2014

WARRANTY

The Jointcom product listed on the title page is warranted against defects in materials and workmanship for one year from the date of shipment. Jointcom's obligation covers repairing or replacing products which prove to be defective during the warranty period. Buyers shall prepay transportation charges for equipment returned to Jointcom for warranty repairs. Obligation is limited to the original purchaser. Jointcom is not liable for consequential damages.

LIMITATION OF WARRANTY

The foregoing warranty does not apply to Jointcom connectors that have failed due to normal wear. Also, the warranty does not apply to defects resulting from improper or inadequate maintenance by the Buyer, unauthorized modification or misuse, or operation outside of the environmental specifications of the product. No other warranty is expressed or implied, and the remedies provided herein are the Buyer's sole and exclusive remedies.

DISCLAIMER OF WARRANTY

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, JOINTCOM AND ITS SUPPLIERS DISCLAIM ALL WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH REGARD TO THE PRODUCT. THE USER ASSUMES THE ENTIRE RISK OF USING THE PRODUCT. ANY LIABILITY OF PROVIDER OR MANUFACTURER WILL BE LIMITED EXCLUSIVELY TO PRODUCT REPLACEMENT.

NO LIABILITY FOR CONSEQUENTIAL DAMAGES. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL JOINTCOM OR ITS SUPPLIERS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES WHATSOEVER INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION, OR ANY OTHER PECUNIARY LOSS ARISING OUT OF THE USE OF OR INABILITY TO USE THE PRODUCT, EVEN IF JOINTCOM HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. BECAUSE SOME STATES AND JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

NOTICE

Jointcom has prepared this manual for use by Jointcom personnel and customers as a guide for the proper installation, operation and maintenance of Jointcom equipment and computer programs. The drawings, specifications, and information contained herein are the property of Jointcom, and any unauthorized use or disclosure of these drawings, specifications, and information is prohibited; they shall not be reproduced, copied, or used in whole or in part as the basis for manufacture or sale of the equipment or software programs without the prior written consent of Jointcom.

Safety Precautions

This product is a Safety Class I product. When supplying power to this equipment, connect the accessory 3-pin power cord to a 3-pin grounded power outlet. If a grounded 3-pin outlet is not available, use a conversion adapter and ground the green wire, or connect the frame ground on the rear panel of the equipment to ground. If power is supplied without grounding the equipment, there is a risk of receiving a severe or fatal electric shock.

Only the AC/DC power adaptor supplied by Jointcom should be used. Jointcom is not liable for any personal injury or product damage caused by using non-standard power supply.

This equipment may not be repaired by the operator. Do not attempt to remove the equipment covers or to disassemble internal components. Only certified service technicians with the knowledge of electrical fire and shock hazards should service this equipment. There are high-voltage parts in this equipment presenting a risk of severe injury or fatal electric shock to untrained personnel. In addition, there is a risk of damage to precision components.

Input Power & Other Information

The input voltage for PIM Analyzer is 48VDC±15%.The allowable line input voltage for AC/DC Adapter is 220VAC/110VAC ± 10%.

Table I – Input Power Requirements

Item	Specification
Regulated Input	220VAC/110VAC ± 10%, 50-60 Hz
JCIMA-P2 Instrument Power Consumption	300W

Caution

1. The Power Amplifier and Signal Source should not be turned on while the RF OUT port is not proper terminated.
2. Make sure the RF output is turned off when connecting and disconnecting the cables.
3. Connecting well or not will impact the test results. In order to reduce the testing error, please ensure all connectors are connected correctly with using the torque wrenches provided by Jointcom.
4. The test cables (low PIM) shall not be distorted seriously.
5. The test cables and adaptors, which should be low passive intermodulation, are vulnerable parts. Once any non-performing (such as loose, instable etc.) be found, replace them timely.
6. In order to extend service life of the equipment, please use the 7/16F-7/16M adaptor which provided by manufacturer, and replace it with a new adaptor regularly.

Table of Contents

1. OVERVIEW 1

1.1 JCIMA-P2 MODELS 1
1.2 JCIMA-P2 MULTI-FUNCTION PIM ANALYZER FUNCTIONS 1
1.3 JCIMA-P2 MULTI-FUNCTION PIM ANALYZER EXTERIOR 2
1.4 ACCESSORIES 4

2. OPERATION 7

2.1 TURN ON AND TURN OFF THE PIM ANALYZER 7
2.2 SETUP AND OPERATION OF WIRELESS REMOTE CONTROL 9
2.2.1 Setup Remote Control Window for Windows System 9
2.2.2 Setup for Android Based Operation systems 11
2.2.2.1 Remote Control Desktop Software Download 11
2.2.2.2 Wireless Connection Setup 12
2.2.2.3 Remote Desktop Setup 12
2.2.3 Remotely Control the PIM Analyzer 15
2.2.3.1 Access Test Window of PIM Analyzer 15
2.2.3.2 Soft Keyboards 15
2.2.3.3 Quit and Re-access to Test Window 16
2.2.3.4 Exit Remote Connection 18
2.3 FRONT PANEL CONTROL 20
2.3.1 Turn On/Off PIM Analyzer and Run the measurement 21
2.3.1.1 Power Button 21
2.3.1.2 Start Button 21
2.3.2 Function Status LEDs 22
2.3.3 Table of LED Screen 22

3. PIM MEASUREMENT FUNCTION 24

3.1 OPERATION INTERFACE 24
3.1.1 Functions Option Section 24
3.1.2 Test Curve Section 25
3.1.3 Test Result Evaluation Section 25
3.1.4 Test Mode Display Section 26
3.1.4.1 Configured Parameters of Test Carriers 26
3.1.4.2 Sweep Mode and IM (Intermodulation Product) Orders Mode 27
3.1.5 PIM Unit Option 27
3.1.6 Test Report Section 27
3.1.7 Command Bar 27
3.2 SETUP FOR PIM MEASUREMENT 28
3.2.1 Test Mode Setup 29
3.2.1.1 Frequency Sweep Mode 29
3.2.1.2 Time Sweep Mode 29
3.2.1.3 Power Sweep Mode 29
3.2.1.4 Setup Test Mode 29
3.2.2 Sweep Times Setup 30
3.2.3 RF Carriers Parameter Setup 30
3.2.3.1 Frequencies Setup 30
3.2.3.2 Power Setup 32

3.2.3.3 Frequency Step Setup....32
3.2.4 Setup for PIM Orders....32
3.2.5 Attenuation Setup....33
3.2.6 Count Setup....33
3.2.7 Power Range and Power Step Setup....34
3.2.8 Save or Set Back Default Setting....34
3.2.9 Frequency Band setup (for Dual-band Model only)....35
3.2.9.1 Band setup for JCIMA-700-P2....35
3.2.9.2 Band setup for JCIMA-1921-P2....35
3.3 PIM MEASUREMENT....36
3.3.1 Preparation before Measurement....36
3.3.2 Start and Stop PIM Measurement....37
3.3.3 Calibration for PIM Measurement....38
3.3.3.1 Residual Intermodulation....38
3.3.3.2 Calibration for Standard Adapter....38
3.3.4 PIM Test Result....39
3.3.5 Save and Read PIM Test Result....40
3.3.5.1 Save the PIM Test Result....40
3.3.5.2 Read Saved PIM Test Result....41
4. DISTANCE TO PIM AND VSWR (RTF)....42
4.1 OPERATION INTERFACE....42
4.1.1 Function Option Section....42
4.1.2 Test Setup Display Section....42
4.1.3 Test Curve Section....43
4.1.4 Command Bar....44
4.2 SETUP FOR RTF MEASUREMENT....45
4.2.1 Mode Setup for RTF Measurement....45
4.2.2 Setup for Power Level....46
4.2.3 Setup for Resolution....46
4.2.4 Setup for Distance Range....47
4.2.5 Calibration at 0 Meter....47
4.2.5.1 Calibration at 0 meter under RTF Test Mode....47
4.2.5.2 Calibration at 0 meter under VSWR Test Mode....47
4.2.6 Calibration for Velocity Factor....48
4.2.7 SETTING Softkey....48
4.2.6.1 Setup for Y-Axis Range....48
4.2.6.2 Setup for Velocity Factor....48
4.2.6.3 PIM Fault Threshold Setup....49
4.2.6.4 Cable Loss Setup....49
4.3 DISTANCE TO PIM FAULT MEASUREMENT....50
4.3.1 Preparation before Measurement....50
4.3.1.1 Preparation for distance to PIM Measurement....50
4.3.1.2 Preparation for distance to VSWR Measurement....50
4.3.2 Calibration for Distance to PIM Fault Measurement....51
4.3.2.1 0 Meter Calibration for RTF Test Mode....51
4.3.2.2 0 Meter Calibration for VSWR Test Mode....52
4.3.2.3 Velocity Factor Calibration....54
4.3.3 Start and Stop Measurement....55
4.3.4 Distance to PIM and VSWR Test Result....55

4.3.5 Save and Read RTF Test Result *56*
4.3.5.1 Save the Test Result 56
4.3.5.2 Read Saved Test Result 57

5. SPECTRUM ANALYZER 58

5.1 OPERATION INTERFACE 58
5.1.1 Function Option Section *58*
5.1.2 Test Curve Section *59*
5.1.3 Command Bar *59*
5.2 SETUP FOR SPECTRUM MEASUREMENT 61
5.2.1 Test mode setup *61*
5.2.2 Reference Level Setup *62*
5.2.3 Frequency Setup *63*
5.2.4 Setup for SCALE *64*
5.2.5 Reference Position Setup *64*
5.2.6 Enable Markers *65*
5.2.7 Setup Frequency for Markers *65*
5.2.8 Move the marker to Peak Power *65*
5.2.9 Setup for External Attenuation Compensation *65*
5.2.10 Hold MENU *66*
5.2.11 The Trace Function *66*
5.2.12 Quick Span Shift Command *69*
5.2.13 Load Offset File for Compensation *69*
5.2.14 Channel Power Measurement *69*
5.2.15 Spectrum Measurement *71*
5.2.16 Preparation of the Measurement *71*
5.2.17 Start and Stop the Spectrum Measurement *71*
5.2.18 Save and Read the Test Result *72*
5.3.3.1 Save the Spectrum Measurement 72
5.3.3.2 Read Saved Test Result 72

6. ISOLATION/ INSERTION LOSS MEASUREMENT FUNCTION 73

6.1 OPERATING INTERFACE 73
6.1.1 Function Option Section *74*
6.1.2 Test Curve Section *74*
6.1.3 Command Bar *75*
6.2 SETUP FOR ISOLATION/ INSERTION LOSS MEASUREMENT 75
6.2.1 Frequency Range Setup *75*
6.2.2 Y-Axis Auto-Regulation *76*
6.2.3 Isolation/ Insertion Loss Setting Window *77*
6.3 ISOLATION/INSERTION LOSS MEASUREMENT 77
6.3.1 Calibration before Measurement *77*
6.3.2 Start and Stop the Isolation/ Insertion Loss Measurement *78*
6.3.2.1 Test Setup 78
6.3.2.2 Start and Stop the measurement 79
6.3.3 Save and Read the Test Result *79*
6.3.3.1 Save the Test Result 79
6.3.3.2 Read Saved Test Result 80

7. VSWR/RETURN LOSS MEASUREMENT 81

7.1 OPERATING INTERFACE 81
7.1.1 Function Option Section 81
7.1.2 Test Curve Section 82
7.1.3 Command Bar 83
7.2 SETUP FOR VSWR/ RETURN LOSS MEASUREMENT 83
7.2.1 Frequency Range Setup 83
7.2.2 Y-Axis Auto-Regulation 84
7.2.3 VSWR/ Return Loss Setting Window 85
7.2.4 Switch between Return Loss and VSWR 86
7.3 VSWR/ RETURN LOSS MEASUREMENT 86
7.3.1 Calibration before Measurement 86
7.3.2 Start and Stop the VSWR/ Return Loss Measurement 87
7.3.2.1 Test Setup 87
7.3.2.2 Start and Stop the measurement 88
7.3.3 Save and Read the Test Result 88
7.3.3.1 Save the Test Result 88
7.3.3.2 Read Saved Test Result 89

8. 2ND HARMONIC AND 2ND ORDER PIM MEASUREMENT FUNCTION 90

8.1 OPERATING INTERFACE 90
8.1.1 Function Option Section 90
8.1.2 Test Curve Section 90
8.1.3 Command Bar 92
8.1.4 Test Result Evaluation Section 92
8.2 SETUP FOR 2ND HARMONIC/ 2ND PIM MEASUREMENT 93
8.2.1 Test Mode Setup 94
8.2.1.1 Frequency Sweep Mode 94
8.2.1.2 Time Sweep Mode 94
8.2.1.3 Setup Test Mode 94
8.2.2 Sweep Times Setup 94
8.2.3 RF Carriers Parameter Setup 94
8.2.3.1 Frequencies Setup 95
8.2.3.2 Power Setup 96
8.2.3.3 Frequency Step Setup 97
8.2.3.4 Set up the Max/Min value of Y-axis 97
8.3 2ND HARMONIC/ 2 ORDER PIM MEASUREMENT 97
8.3.1 Preparation Before the measurement 97
8.3.2 Start and Stop the 2nd Harmonic/ 2 Order PIM Measurement 98
8.3.3 Save and Read the Test Result 98
8.2.6.1 Save the Test Result 98
8.3.3.1 Read Saved Test Result 99

9. OTHERS (CONFIG & LOCK) 100

9.1 CONFIGURATION SETUP 100
9.2 SCREEN LOCK FUNCTION 100

APPENDIX A. PRODUCT SPECIFICATIONS 102

APPENDIX B. MAINTENANCE AND TIPS 104

CONTACTS 105

Table of Figure

Figure 1-1 Front View 2
Figure 1-2 Back View 2
Figure 1-3 Left Side View 3
Figure 1-4 Right Side View 3
Figure 2-1 JCIMA-P2 Front Panel 20
Figure 3-1 PIM Operation Interface 24
Figure 3-2 PIM Test Curve Section 25
Figure 3-3 PIM Test Result Evaluation Section 26
Figure 3-4 PIM Test Mode Display Section 26
Figure 3-5 PIM Test Report Section 27
Figure 3-6 PIM Command Bar 28
Figure 3-7 Setting Window for PIM Setup 28
Figure 3-8 RF Carriers Setup Section 30
Figure 3-9 Setup for PIM Orders 33
Figure 3-10 Count Option 34
Figure 3-11 Count Option 34
Figure 3-12 Setup for PIM Test 36
Figure 3-13 Calibration Setup for Standard Adapter 39
Figure 4-1 RTF Operation Interface 42
Figure 4-2 RTF PIM Test Curve Section 43
Figure 4-3 RTF VSWR Test Curve Section 44
Figure 4-4 RTF Command Bar 44
Figure 4-5 0 Test Mode Setup for RTF Function 45
Figure 4-6 Set Distance Setup Window 47
Figure 4-7 0 Meter Calibration Setup Window for RTF Test Mode 47
Figure 4-8 0 Meter Calibration Setup Window for VSWR Test Mode 47
Figure 4-9 Velocity Factor Calibration Setup Window 48
Figure 4-10 Setup for Distance to PIM 50
Figure 4-11 Setup for Distance to VSWR 50
Figure 4-12 0 Meter Calibration Setup for distance to PIM 51
Figure 4-13 0 Meter Calibration Setup for distance to VSWR 52

Figure 4-8 Velocity Factor Calibration Setup 54
Figure 5-1 Spectrum Analyzer Operation Interface 58
Figure 5-2 Spectrum Test Curve Section 59
Figure 5-3 Spectrum Command Bar 60
Figure 5-4 Setup for Spectrum Measurement 71
Figure 6-1 Operation Interface of Isolation Measurement Function 73
Figure 6-2 Isolation Test Curve Section 74
Figure 6-3 Setting Window for Isolation/ Insertion Loss Feature 77
Figure 6-4 Setup for Isolation/ Insertion Loss Calibration 77
Figure 6-5 Setup for Isolation Measurement 79
Figure 6-6 Setup for Insertion Loss Measurement 79
Figure 7-1 Operation Interface of VSWR/ Return Loss Measurement Function 81
Figure 7-2 VSWR/ Return Loss Test Curve Section 82
Figure 7-3 Setting Window for VSWR/ Return Loss Feature 85
Figure 7-4 Setup for VSWR/ Return Loss Calibration 86
Figure 7-5 Setup for VSWR/ Return Loss Measurement 88
Figure 8-1 Operation Interface of 2nd Harmonic and 2nd order PIM Measurement Function 90
Figure 8-2 2nd Harmonic/2nd Order PIM Measurement Test Curve Section 91
Figure 8-3 2nd Harmonic /2nd PimTest Result Evaluation Section 92

Table List

Table 1-1 JCIMA-P2 Models 1
Table 2-1 Function Status LEDs 22
Table 3-1 Valid Frequency Range 31
Table 4-1 TX Frequency and 3rd Order PIM Frequency Range for RTF 46
Table 5-1 Frequency Ranges for Narrowband Mode 62
Table 6-1 Valid Frequency Range for Isolation/ Insertion Loss Measurement 76
Table 7-1 Valid Frequency Range for VSWR/ Return Loss Measurement 84
Table 8-1 Valid Frequency Range 95

1. Overview

JCIMA-P2 Multi-function PIM Analyzer is an integrated source and receiver that generates high-power signals to measure the reflected 3rd order, 5th order or 7th order and 9th order Passive Intermodulation (PIM) products via its' spectrum analyzer.

In addition to verify and troubleshooting PIM issues, the JCIMA-P2 can provide other functions, like Range to Fault (RTF, PIM Fault or VSWR Fault), Spectrum Analyzer, Isolation/ Insertion Loss, VSWR/ Return Loss and 2nd order Harmonic and 2nd order PIM measurements, to help the comprehensive evaluation of the quality of passive RF component and antenna feeder system.

1.1 JCIMA-P2 Models

Model Number	Frequency Band	Tx Band(MHz)	Rx Band(MHz)
JCIMA-700-P2	700MHz Band (Upper and Lower)	732 – 764	698 – 716 779.5 – 804.5
JCIMA-850-P2	850MHz Band	869 – 894	824 – 849
JCIMA-900-P2	900MHz Band	930 – 960	885 – 915
JCIMA-1800-P2	1800MHz Band	1805 – 1880	1710 – 1785
JCIMA-1900-P2	1900MHz Band	1930 - 1990	1850 - 1910
JCIMA-1921-P2	1900MHz and AWS Dual-band	1930 - 1990 and 2110 - 2155	1710 - 1910
JCIMA-2000-P2	2100MHz Band	2110 - 2170	1920 - 2060
JCIMA-2600-P2	2.5GHz Band	2620 - 2690	2500 - 2570

Table 1-1 JCIMA-P2 Models

1.2 JCIMA-P2 Multi-function PIM Analyzer Functions

- PIM Measurement
- Spectrum Measurement
- Isolation/ Insertion Loss Measurement
- VSWR/Return Loss Measurement
- 2nd Harmonic and 2nd PIM Measurement (support JCIMA-850-P2 and JCIMA-900-P2 only)
- Range to Fault Measurement (RTF) for PIM Fault and VSWR Fault Respectively

1.3 JCIMA-P2 Multi-function PIM Analyzer Exterior

All external ports of JCIMA-P2 are set at sides of the unit. The equipment turn on switch and status monitoring LEDs are set on the front panel of the unit.

Figure 1-1 Front View

Figure 1-2 Back View

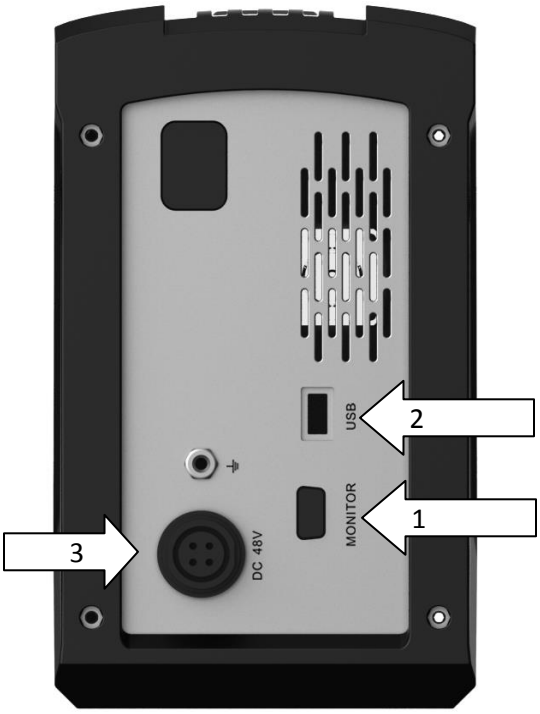


Figure 1-3 Left Side View

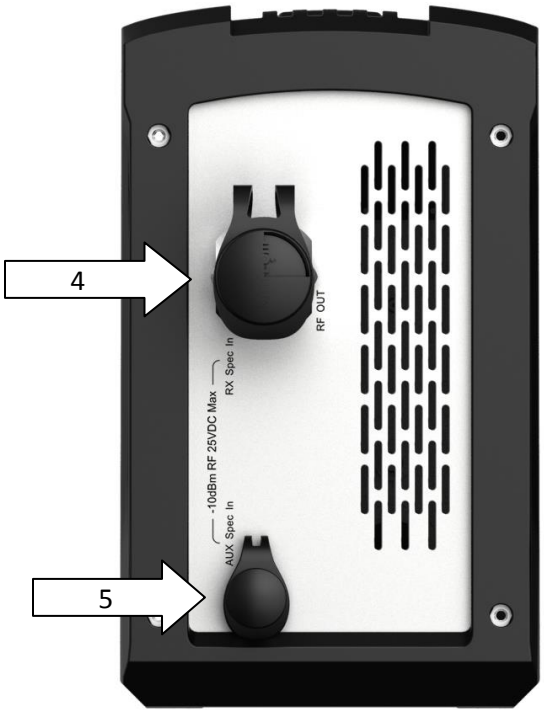


Figure 1-4 Right Side View

- VGA Port
  For external display
- USB2.0
  For external keyboard, mouse, USB flash drives, etc.
- 48VDC IN Port and Switch
  For DC Power supply and Power Switch
- AUX Port
  RF IN port, N type RF port, 50Ω Impedance, -10dBm maximum power handling
- RF IN/OUT Port
  7/16 type RF Input/ Output port for maximum 2*10dBm to 43dBm RF output, 50Ω Impedance

1.4 Accessories

Item Name	Picture	Description
Trolley Case		Dimension: 560mm*350mm*230mm Color: Black
Accessory Backpack		Dimension: 450mm*330mm*150mm Color: Black
Small Accessory bag 1		Dimension: 270mm*200mm*120mm
Small Accessory bag 2		Dimension: 260mm*190mm*60mm

Item Name	Picture	Description
Small Accessory bag 3		Dimension: 180mm*150mm*25mm
Low-PIM Termination		PIM3: ≤-168dBc@2*43dBm Frequency Range: DC-3GHz Impedance: 50Ω Model Number: JCLD-0830-50-04IMF
Connector Adapters		Model Number and Description: AD-DD02: 7/16F-7/16F AD-DD01: 7/16M-7/16F AD-DN01: 7/16M–NF AD-DN02: 7/16F–NM
Low-PIM Test Cable		PIM3 ：≤-171dBc@2*43dBm Impedance: 50Ω Model Number: CK05-1 1m: 1 meter NM-NM CK04-1 3m: 3 meters 7/16M-7/16M CK03-1 3m: 3 meters 7/16M-NM
PIM3 Standard Adapter		PIM3: -80dBm±3dB@2*43dBm or -110dBm±3dB@2*43dBm Type: 7/16M-7/16F Impedance: 50Ω Model Number: Sxxx-100 (xxx is the frequency band, e.g. 850 means 850MHz Band)
Torque Wrench		NB-25:DIN Connector Torque Wrench NB-5: N Type Connector Torque Wrench
Attenuator		30dB*2 Power Capacity: 5W Frequency Range: DC-3GHz Impedance: 50Ω

Item Name	Picture	Description
Adaptors for VSWR		JCCP-0707-50-01-R1A (for 850MHz band) JCCP-0808-50-01-R1A (for 850MHz band) JCCP-0909-50-01-R1A (for 900M band) JCCP-1818-50-01-R1A (for 1800M band) JCCP-1919-50-01-R1A (for 1900MHz band) JCCP-2121-50-01-R1A (for 2000MHz) JCCP-2626-50-01-R1A (for 2.6GHz band)
2W Load		Power Capacity: 2W Frequency Range: DC-3GHz Impedance: 50Ω
AC/DC Adapter		JCADT-11022048-500-01: 220VAC/110VAC to 48VDC, Maximum Output Power 450W
Tablet PC		Operation System: Windows XP SP3, Windows 7 SP1 or Android 2.2 (or above) Hardware: At least 1GHz CPU, 256M RAM and500M Hard Driver, support WiFi
RF Short Circuit		AFA259-1: NM, 50Ω
RF Cable		CYN400-0.5: 0.5Meter,NM-NM,50Ω
Regular Wrench		WRENCH-32: DIN Wrench

2. Operation

2.1 Turn on and turn off the PIM Analyzer

Operating Steps	Figures
1. Connect the AC power cord to 220V/110VAC to 48VDC adapter and then connect to DC power cord from 220V/110VAC to 48VDC adapter to PIM Analyzer. 2. Turn on the power switch at 220V/110VAC to 48VDC adapter. **The PIM Analyzer can be either directly supplied by 48VDC or via the 220V/110VAC to 48VDC adapter supplied by manufacturer** **When connecting AC power cord, the 3-pin power cord needs to be connected to a 3-pin grounded power outlet. If power is supplied without grounding, there will be risk of receiving a severe or fatal electric shock.**	
3. Press the button in the front panel – system starts to boot up and the LED runs cyclically in LED Screen as shown in the left picture. 4. Waiting around 1 minute until the LED shows "000.0", which means the equipment is ready for PIM the measurement.	

5. Connect the remote control terminal (can be PC, Tablet or Smart Phone) to JCIMA-P2
   - Detail setup is described at **Chapter** 2.2.

An external display can be directly connected to the PIM Analyzer via the VGA port of JCIMA-P2. Please be noted that the JCIMA-P2 needs to be rebooted while external display is connected. And only one display (either remote or local display) can be supported at a time.

6. When the software starts up, the system will get to Windows interface first and then starts the hardware self-check process for PIM Analyzer application automatically.

On the Windows interface, double press "PIM" icon can also start the test softw are.

The left figure shows the self-check window. If the system passes hardware self-check, all items will show "succeeded".

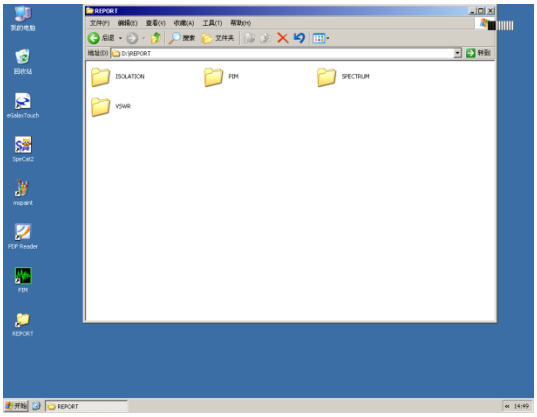
If hardware self-check shows "failed" for any item, the PIM Analyzer needs to be rebooted. If the problem persists, please contact manufacturer.

7. Start Test

Please refer **Chapter** 3 for details

8. After the measurement, the test results can be copied to USB flash stick or external hard driver via USB 2.0 port.

The default access path is D:\ Reports.



As the C-driver is set as write-protection, please do not store any test report in C-driver or desktop.

9. Press the "**Power**" button to turn off the PIM Analyzer – Please refer **Chapter** 2.3 for detail Turn off steps.
10. Switch off the 220V/110VAC to 48VDC Adapter and unplug the power cord from the source outlet.

All RF Connectors, Adapters, Terminations and the cable accessories are easily worn-out parts. Proper protection (such as carefully handling, use of protection lids, storing them in the original protection case, etc.) can extend the life cycle of these parts.

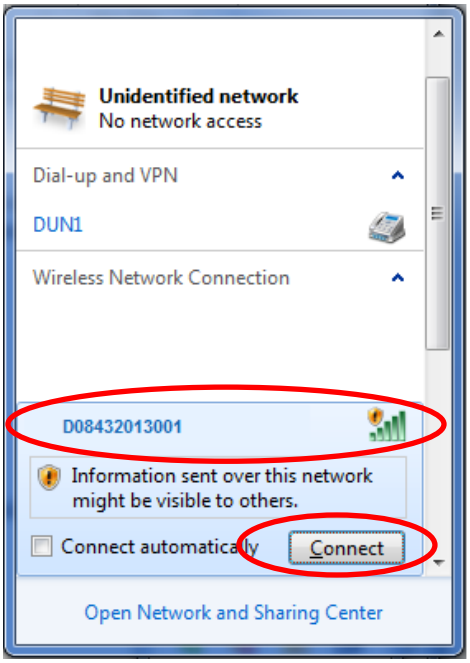
2.2 Setup and Operation of Wireless Remote Control

JCMIA-P2 supports wireless point to point remote control. Any Windows XP, Windows 7, Android 2.2 (or above) or iPhone iOS based PC, Tablet or Smart Phone with WiFi support can be used as the remote control terminal.

2.2.1 Setup Remote Control Window for Windows System

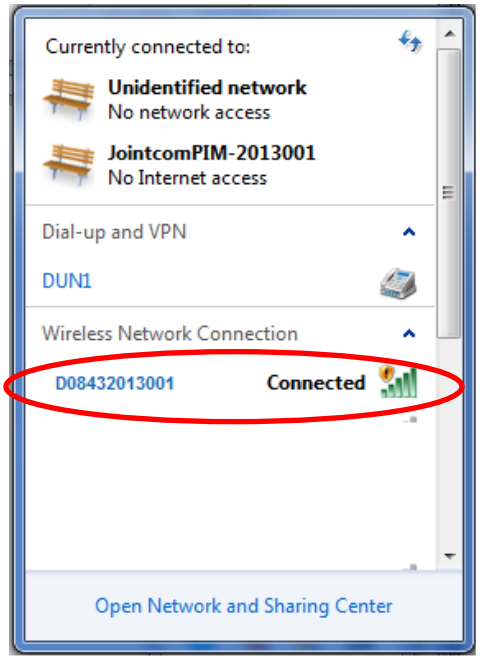
JCIMA-P2 supports Windows XP SP3 and Windows 7 SP1 system.

- Open the Network Connection window by click sign at the right bottom corner of the Windows GUI. Choose the JCIMA-P2 connection "Dxxxxxxxxxxx" (Dxxxxxxxxxxx is the serial number of the PIM Analyzer) and then Click "**Connect**".

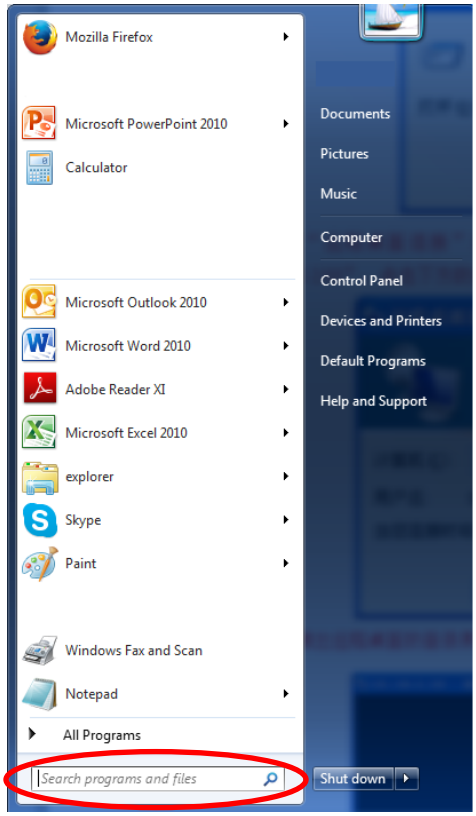


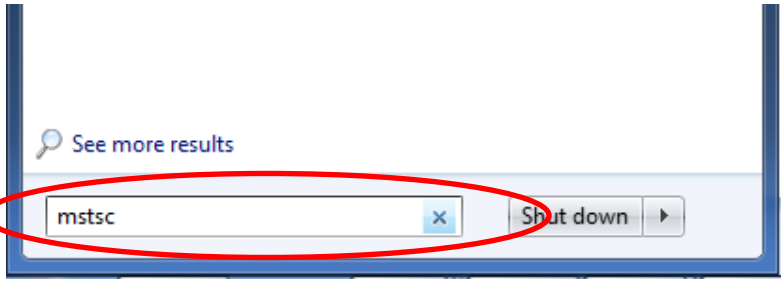
- Confirm JCIMA-P2 is connected (as shown in figure below).

D08432013001

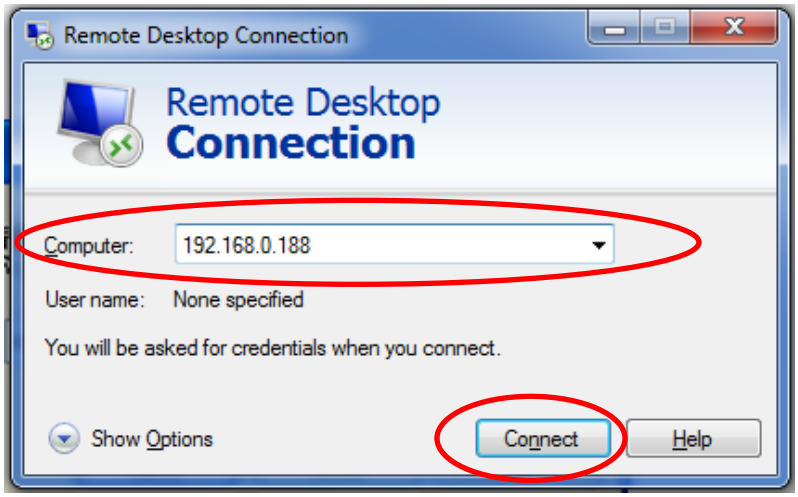


- Click the icon at the left bottom corner of Windows GUI.
- Type “mstsc” then “enter” in “search programs and files” area.





- The “Remote Desktop Connection” Window will pop up.
- Put the IP address of JCIMA-P2 in “Computer” dialog then Click “**Connect**”.



- The remote desktop will pop up. Input “Administrator” as user name and “1” as password.
- Click “**OK**” to get access to the remote desktop.

2.2.2 Setup for Android Based Operation systems

JCIMA-P2 supports Android 2.2 (& above) operation systems.

To implement remote control feature, the remote control software, “Jump Desktop”, needs to be installed in the Tablet PC. There is license fee for Android based “Jump Desktop”. Jointcom covers one “Jump Desktop” license with the Tablet PC delivered together with JCIMA-P2. To acquire extra “Jump Desktop” license, the cost will be covered by user’s own expense.

2.2.2.1 Remote Control Desktop Software Download

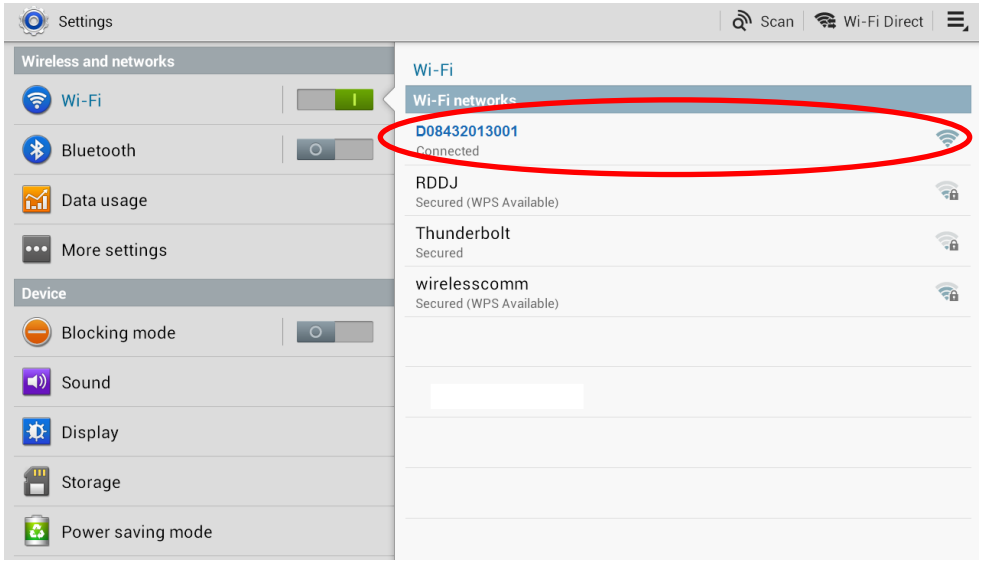
If the remote control terminal is not provided by manufacture, go to Play Store (for Android based Smart Phone or Tablet), search “Jump Desktop”, and then install the “Jump Desktop”.

After installing the SW, the Jump icon,

, will be shown in the interface.

2.2.2.2 Wireless Connection Setup

- Get access to the WiFi networks setting in Android Tablet.
- Choose the JCIMA-P2 connection “JointcomPIM-xxxxxxx” (xxxxxx is the serial number of the PIM Analyzer).
- Click “Connect” and confirm the “JointcomPIM-xxxxxxx” is connected as shown in the figure below

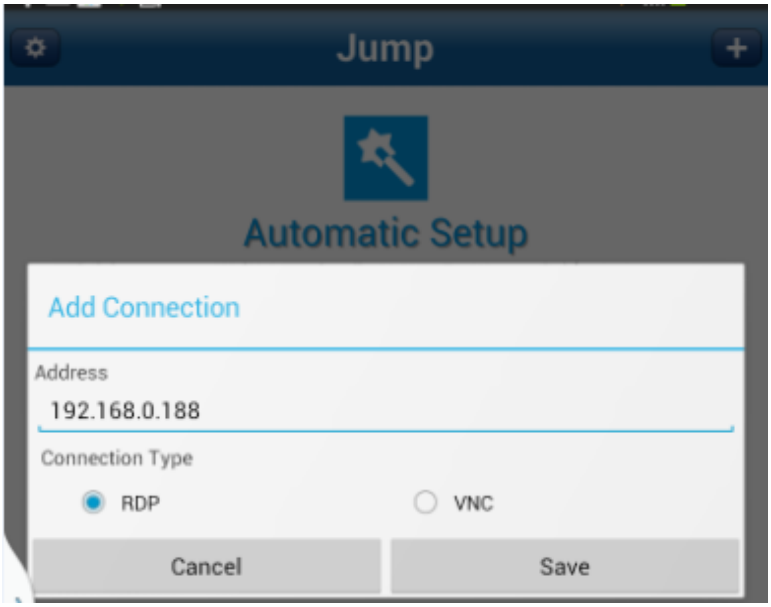


2.2.2.3 Remote Desktop Setup

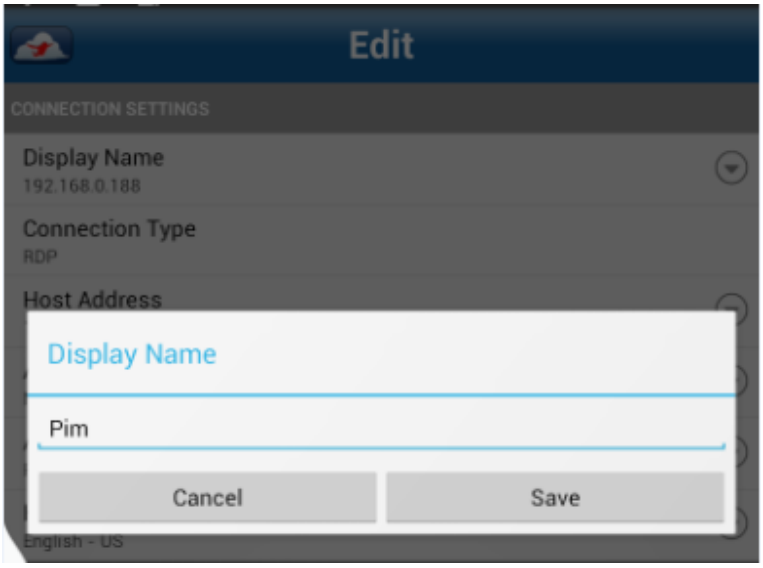
- Double press “**Jump**” Icon in the window to access remote control desktop.
- If it’s the first time using “Jump Desktop”, choose “Manual Setup”.

Jump
Automatic Setup
Quick, easy setup using your Gmail account. Recommended for most users.
Manual Setup
Configure a computer manually by entering it's network address.

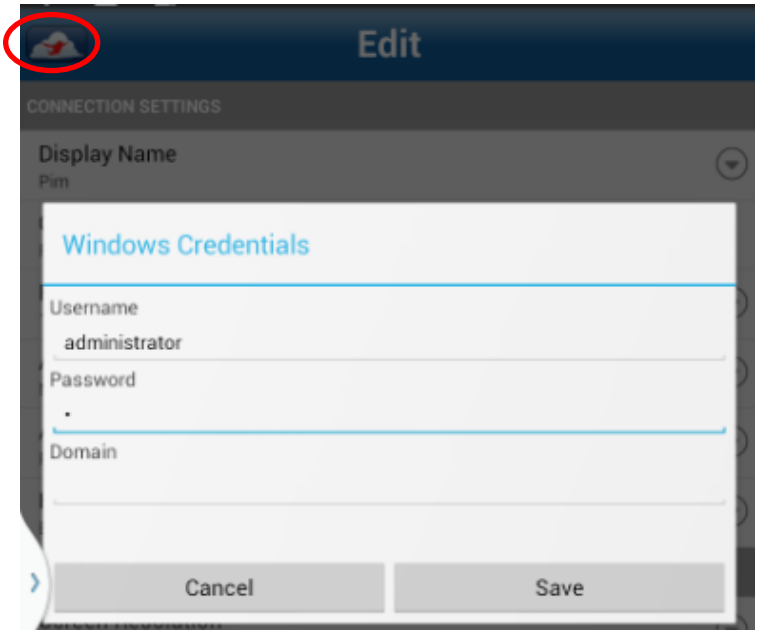
- After pressing “**Manual Setup**”, “**Add Connection**” window will pop-up. In the field of “address” row, input the IP address of PIM Analyzer “**192.169.0.188**”, choose “**RDP**” for “**Connection Type**” and then press “**Save**” to access “**Edit**” window.



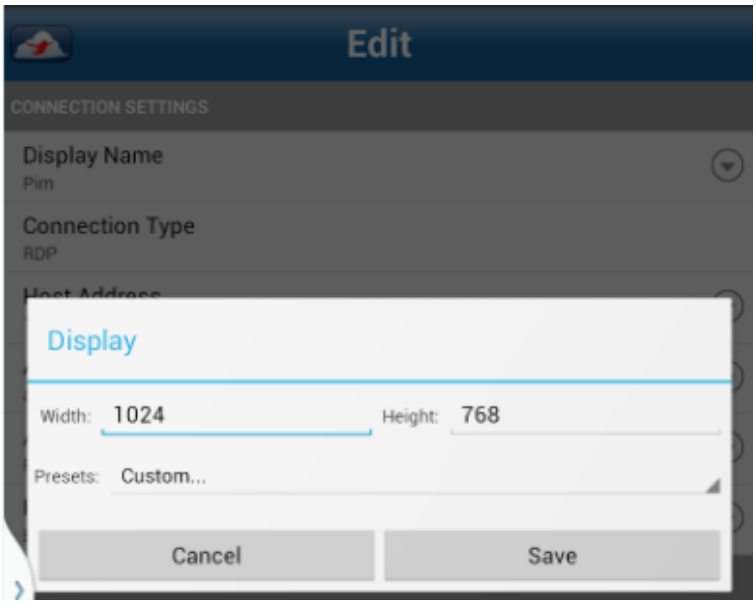
- Press "**Display Name**" to input the name of display and then "**Save**" to get back to "**Edit**" Window.



- Press "**Auto LOGON**", input "**administrator**" and "**1**" for "**Username**" and "**Password**" respectively in the pop-up window. Then press "**Save**" button.
- Press the Icon at the left top corner of "**Edit**" window



- Press "**SCREEN Resolution**" and set 1024*768 as display resolution. Press "**Save**" to save and quit the display resolution window.



Please also refer to the following Web link for the support and user guide of related Jump Desktop version. http://support.jumpdesktop.com/forums/152996-Guides

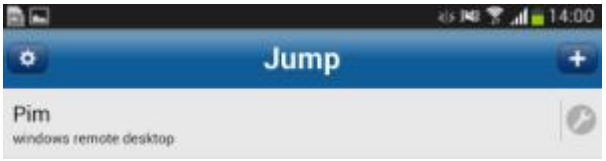
2.2.3 Remotely Control the PIM Analyzer

2.2.3.1 Access Test Window of PIM Analyzer

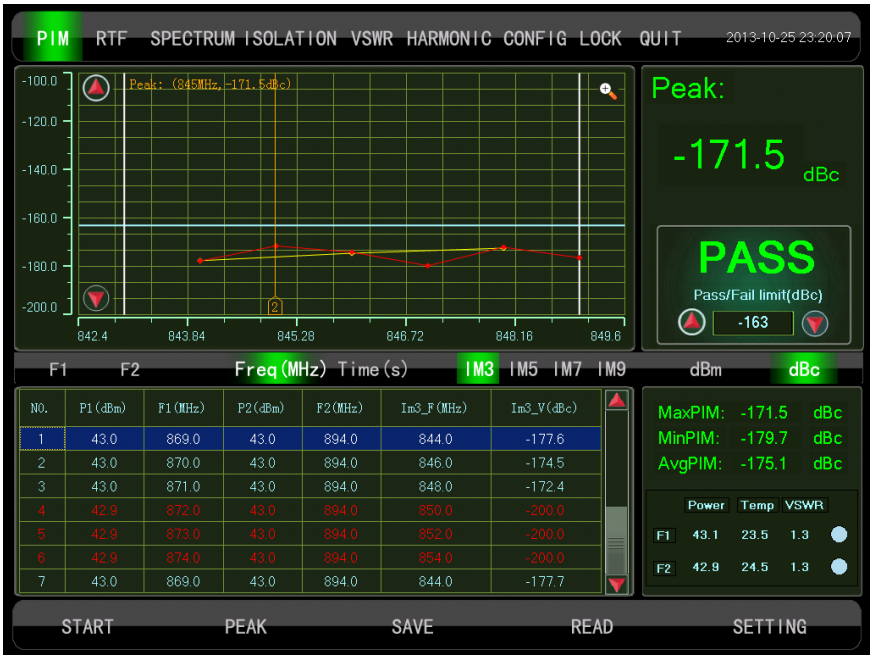
For Windows operation system, please follow steps as described in **Chapter** 2.2.1 to access the PIM Test Window.

For Android based systems, double pressing the

icon, the "**Jump**" window will show in the terminal screen. Press the display name to get access to the PIM Analyzer test window.



When getting access to the test window, all measurements can be used based on the measurement steps defined by **Chapter** 3 to **Chapte**r 8.

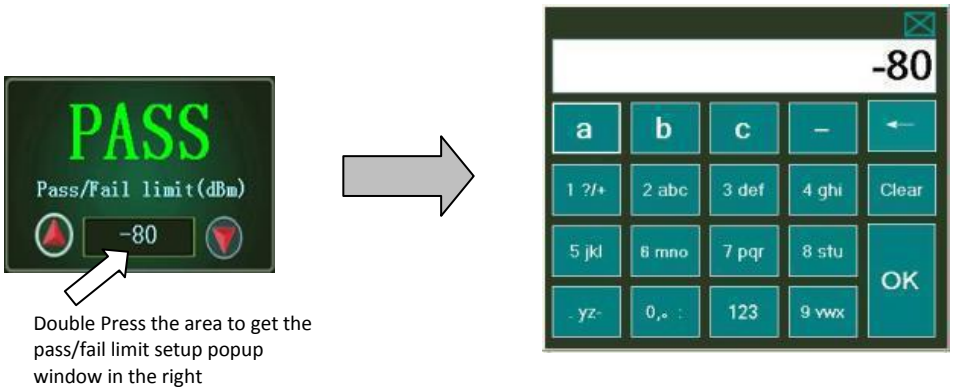


2.2.3.2 Soft Keyboards

When using remote control desktop, there are 2 soft keyboards which can be used for data input. Both soft keyboards can work independently.

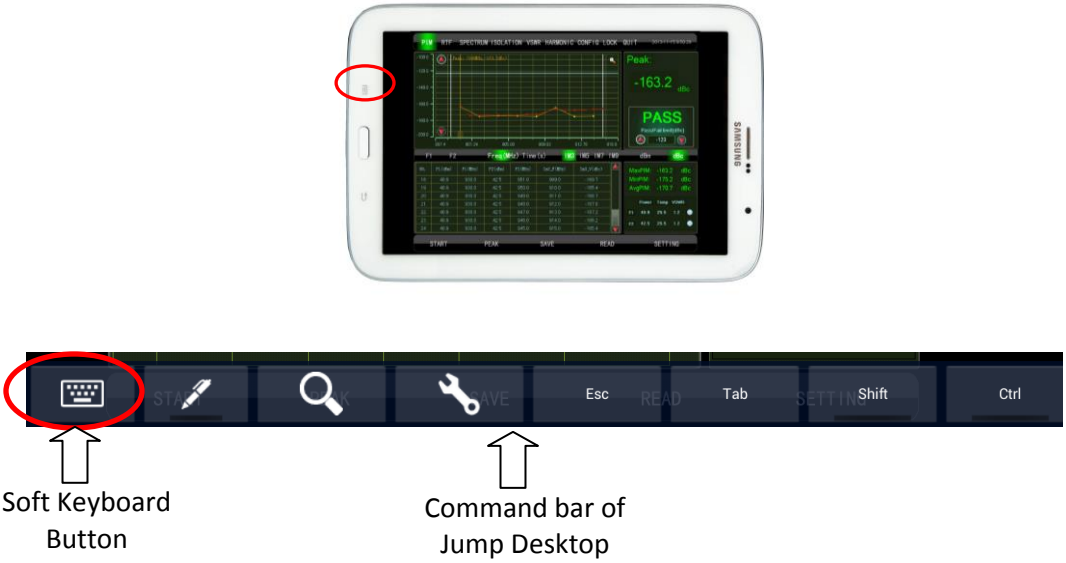
1. Soft Keyboard with PIM Analyzer

Double press the data input area for any data input field and press the number to input data in the pop up soft keyboard.



2. Soft keyboard provided by Jump Desktop

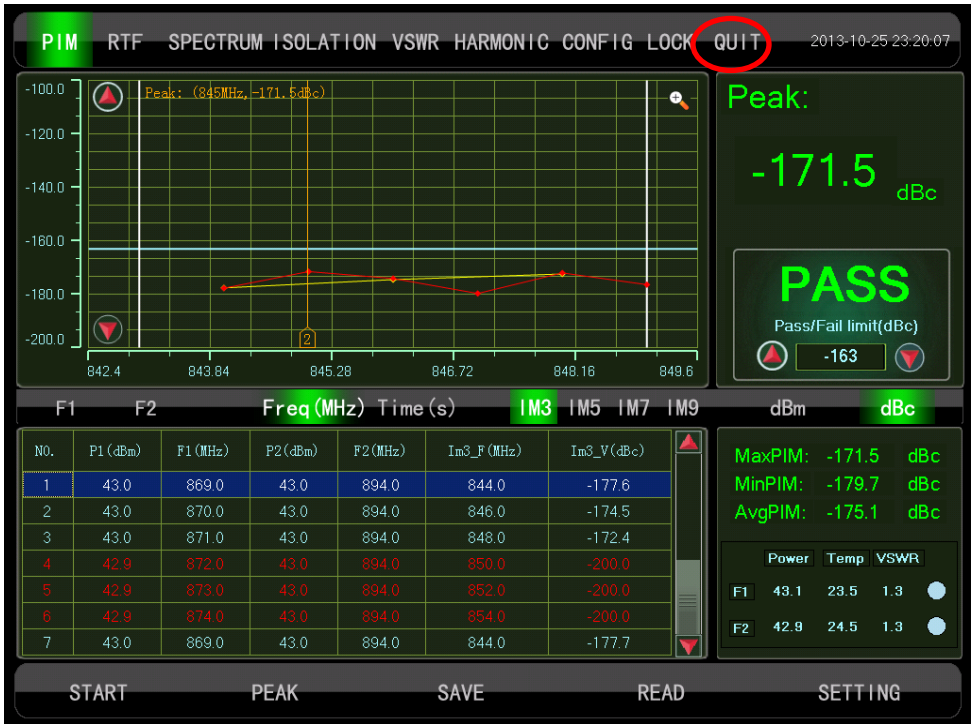
   - Press softkey on Android based Tablet. The command bar of Jump Desktop will show in the bottom of the screen



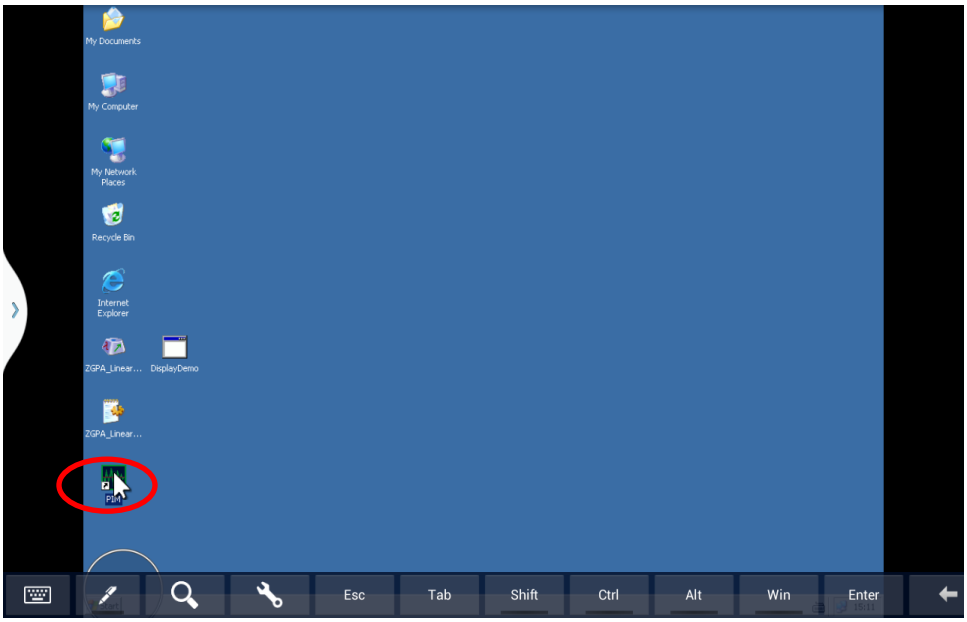
   - Press the soft keyboard button to bring out the soft keyboard and input data

2.2.3.3 Quit and Re-access to Test Window

Press "**QUIT**" button at right top corner of test window to exit test window (still in remote desktop).



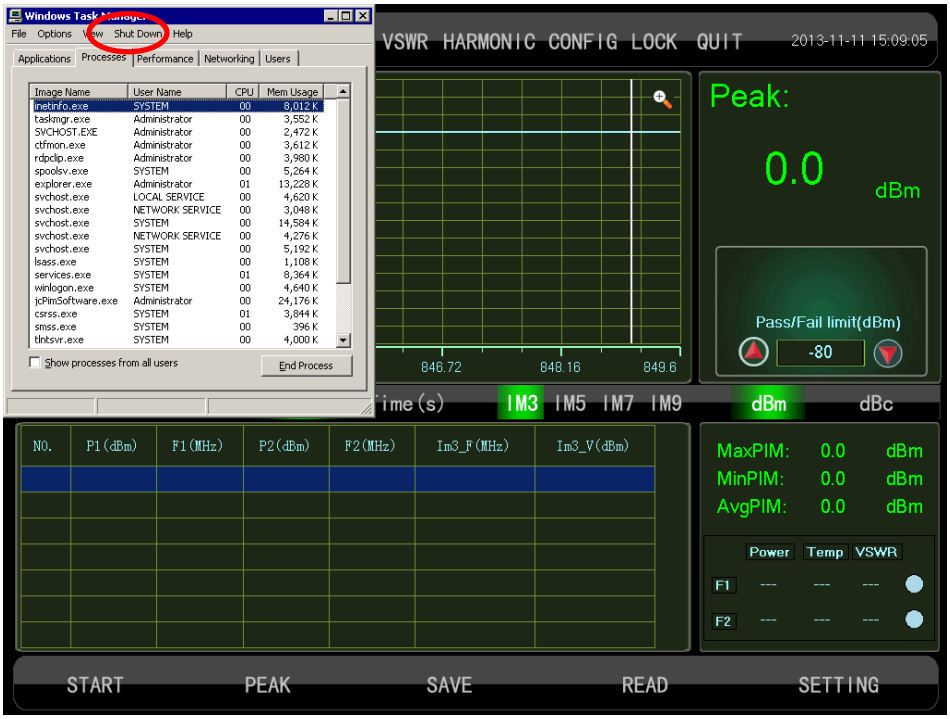
Double press "**PIM**" icon to re-access test window.

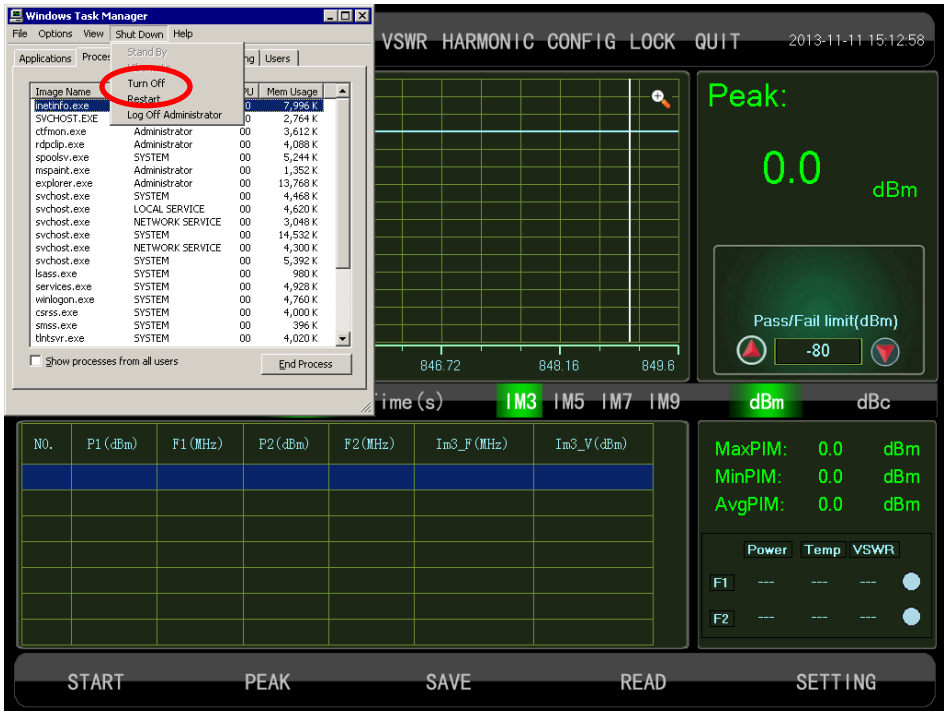


2.2.3.4 Exit Remote Connection

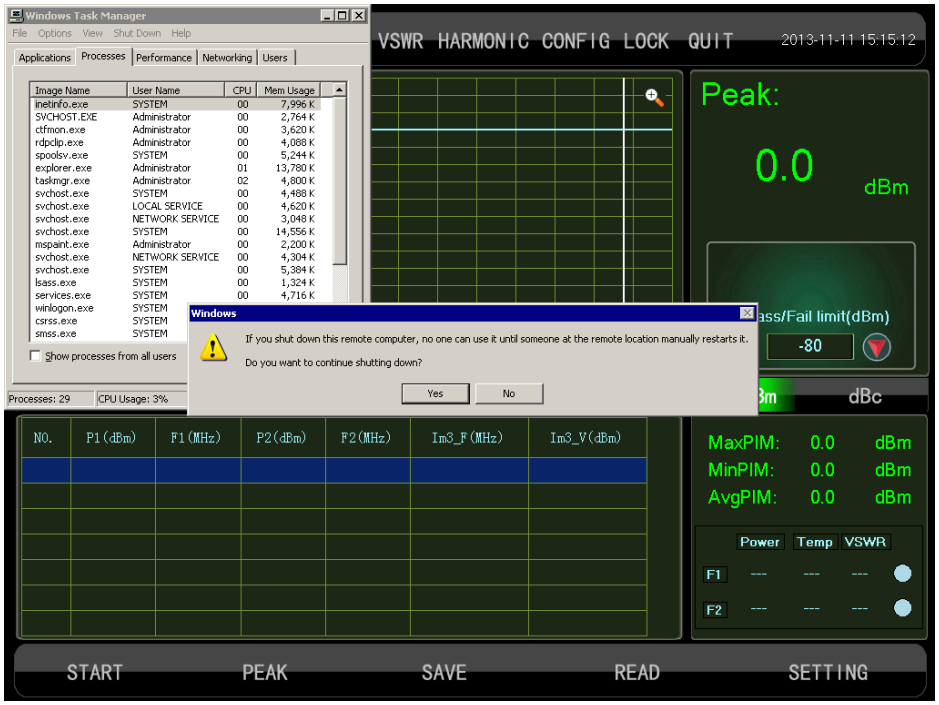
Press “Ctrl”+”Shift”+”ESC” at Jump Desktop menu.

In the pop-up window, chose “**Shutdown**” in the menu and then press “**Turn Off**”.

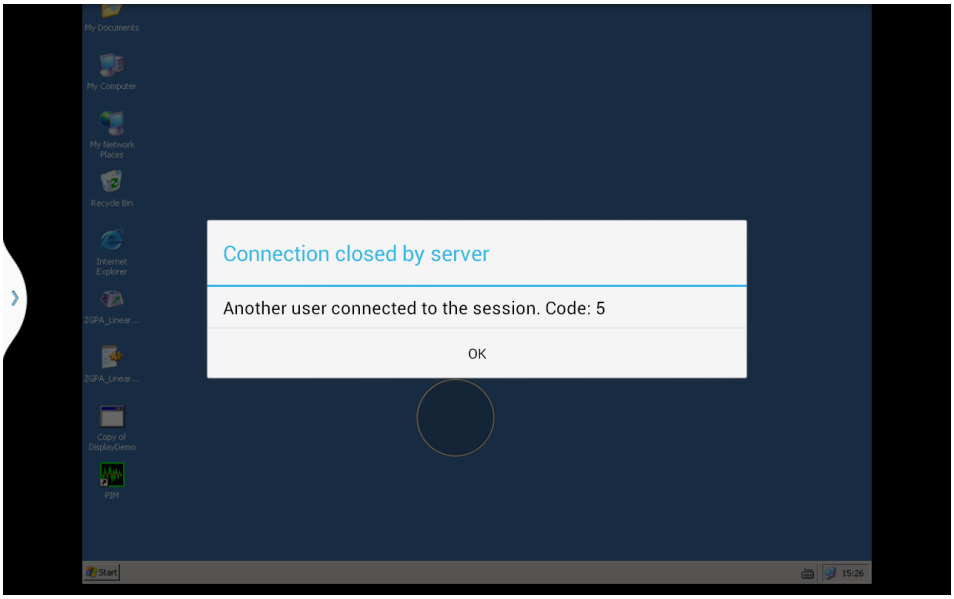




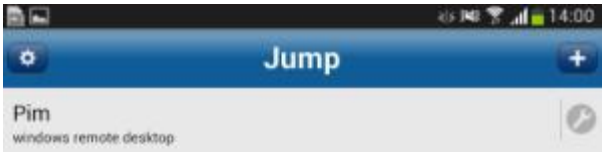
Press "**Yes**" button in the pop-up window to disconnect the remote desk.


Windows Task Manager
VSWR HARMONIC CONFIG LOCK QUIT
2013-11-11 15:15:12
Peak:
0.0
dBm
Windows
If you shut down this remote computer, no one can use it until someone at the remote location manually restarts it.
Do you want to continue shutting down?
Yes
No
NO. P1(dBm) F1(MHz) P2(dBm) F2(MHz) Im3_F(MHz) Im3_V(dBm)
MaxPIM: 0.0 dBm
MinPIM: 0.0 dBm
AvgPIM: 0.0 dBm
Power Temp VSWR
START PEAK SAVE READ SETTING

Only one terminal can control the PIM Analyzer at a time. So when the 2nd remote terminal tries to connect the unit while the original remote terminal is still connected, the original remote terminal will be disconnected. A following window will be popped up.



If user wants to keep using the original terminal, press "**OK**" button in the pop-up window. The connection will be switched back to the Jump window for reconnecting the PIM Analyzer.



2.3 Front Panel Control

There is a LED display for local control and test status, power supply status monitor.

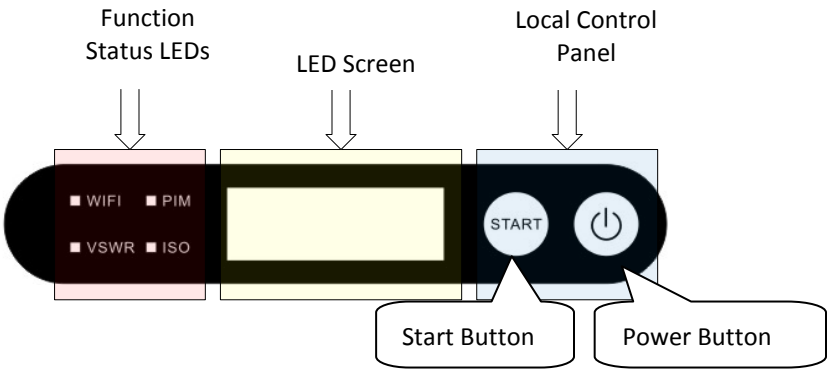


Figure 2-1 JCIMA-P2 Front Panel

2.3.1 Turn On/Off PIM Analyzer and Run the measurement

At the right side of front panel display, there are "**START"**

and "**Power**" buttons. Power button is for turning on/off PIM Analyzer. Start button is for start or stop measurements.

2.3.1.1 Power Button

After pressing the power button, the system starts to boot up and the LED screen in the "Status and Test Result" area (middle of the display) will display moving "**-**" cyclically.

When boot-up successfully completes, the LED screen will show "**000.0**".

If boot-up fails or system has no response more than 70 seconds, the LED display will show "**-F0-**".

While the PIM Analyzer is on, press and hold the power button, the display screen will show "**–xx-**" and PIM Analyzer will start the turn off process. "**–xx-**" is 2-digit number which shows the time (E.g. 0.5 means 0.5 second, 1.0 means 1 second).

The normal turn off procedure is to press and hold the power button between 1 to 3 second. But user can also force system shutdown with holding the power button more than 3 seconds when software can't turn off by itself.

Following is the system response while holding the power button with different time:

1) Hold Power button less than 1 second
   - System will treat this action as misoperation and won't response for the action
2) Hold between 1 to 3 seconds (normal turn off process)
   - System will be turned off in 30s. If not response from PIM Analyzer, the screen will then show "**-F1-**".
3) Hold between 3s to 6s (force to turn off after 30 seconds)
   - System will start counting (show in the LED screen from 30 to 0) and then forced to be turned off after 30 seconds.
4) Hold more than 6s (force to turn off instantly)
   - System will turn off right away

2.3.1.2 Start Button

After turning on the PIM Analyzer, when press "**START**" button, system starts the measurement. If press start button again, the measurement will be stopped.

2.3.2 Function Status LEDs

As shown in **Figure 2-1**, there are 4 function status LEDs, which are WiFi, PIM, VSWR and ISO LEDs, in JCIMA-P2 front panel.

Table 2-1shows the detail status of functional Status LEDs.

Item No.	LED Status	Notes
1	WIFI LED ON	WiFi is turned on and working properly
2	WIFI LED Off	Problem with WiFi
3	PIM LED ON	JCIMA-P2 is under PIM Measurement function
4	VSWR LED ON	JCIMA-P2 is under VSWR/ Return Loss Measurement function
5	ISO LED ON	JCIMA-P2 is under Isolation and Insertion Loss Measurement function
6	PIM, VSWR and ISO LED Off	JCIMA-P2 is under RTF, Spectrum Analyzer or 2nd Harmonic measurement function

Table 2-1 Function Status LEDs

2.3.3 Table of LED Screen

Item No.	Status	Display	Notes
1	Turn on the PIM Analyzer	"-" cyclically	
2	System boot-up fail or no response after 70s	"-F0-"	
3	System Boot-up successful	"000.0"	
4	VSWR Measurement	Test Result of Peak VSWR or Return Loss	The Unit is dB for Return Loss
5	Isolation Measurement	Test Result of Peak Isolation/ Insertion Loss	The Unit is dBc
6	PIM Measurement	Test Result of Peak PIM	The Unit is dBc
7	Other Measurements	"*1111*"	For Spectrum, 2nd Harmonics and Range to Fault measurement
8	In Windows Interface	"P "	When system is in windows interface or under preheat process
9	Test in process	Blinking "0000"	Waiting for Response
		"-F2-"	No Response
10	Test Completes with problems	"E001"	Spectrum Analyzer self-check failure
		"E002"	Power Amplifier self-check failure
		"E003"	PA VSWR Alarm

		"**E004**"	PA Over Current Alarm
		"**E005**"	PA Over Temperature Alarm
		"**E006**"	PA Low Power Alarm
		"**E007**"	PA High Power Alarm
		"**E008**"	Test incomplete Alarm
11	Turn Off the PIM Analyzer	"**-xx-**"	Turn Off Counting Time
12	Turn Off Fails	"**-F1-**"	

3. PIM Measurement Function

The PIM measurement function provides the measurement for 3rd order, 5th order, 7th order and 9th order of passive intermodulation measurement, which helps to evaluate or troubleshoot the PIM issue of Device/ System under Test.

3.1 Operation Interface

Press the "PIM" softkey in Function Option Section. The JCIMA-P2 will get access to the PIM operation interface (default interface after turning on the JCIMA-P2).

Figure 3-1 shows the PIM operation interface of JCIMA-P2 Multifunction PIM Analyzer.

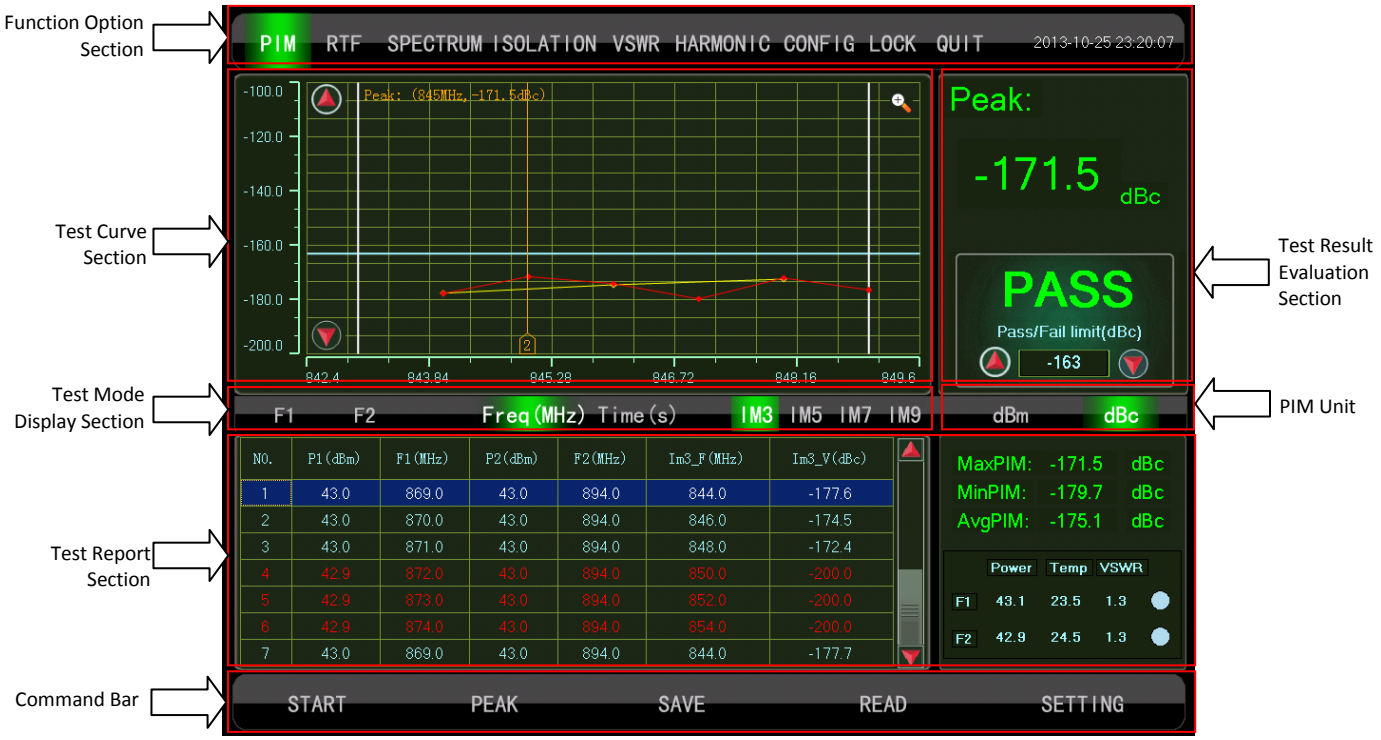


Figure 3-1 PIM Operation Interface

3.1.1 Functions Option Section

The Function Option Section is for test measurement function selection.

- ✧ PIM: For Passive Intermodulation Measurement
- ✧ RTF: For location of PIM and VSWR Failure Measurement
- ✧ SPECTRUM: For Spectrum Measurement

- ISOLATION: For Isolation/ Insertion Loss Measurement
- VSWR: For VSWR/ Return Loss Measurement
- HARMONIC: For 2nd Harmonic Measurement
- CONFIG: For configuration and frequency band (for Dual-band Model only) setup
- LOCK: Screen Lock Setup
- QUIT: Quit Test Window to Windows Interface

3.1.2 Test Curve Section

Figure 3-2 shows the PIM measurement result with test result curves.

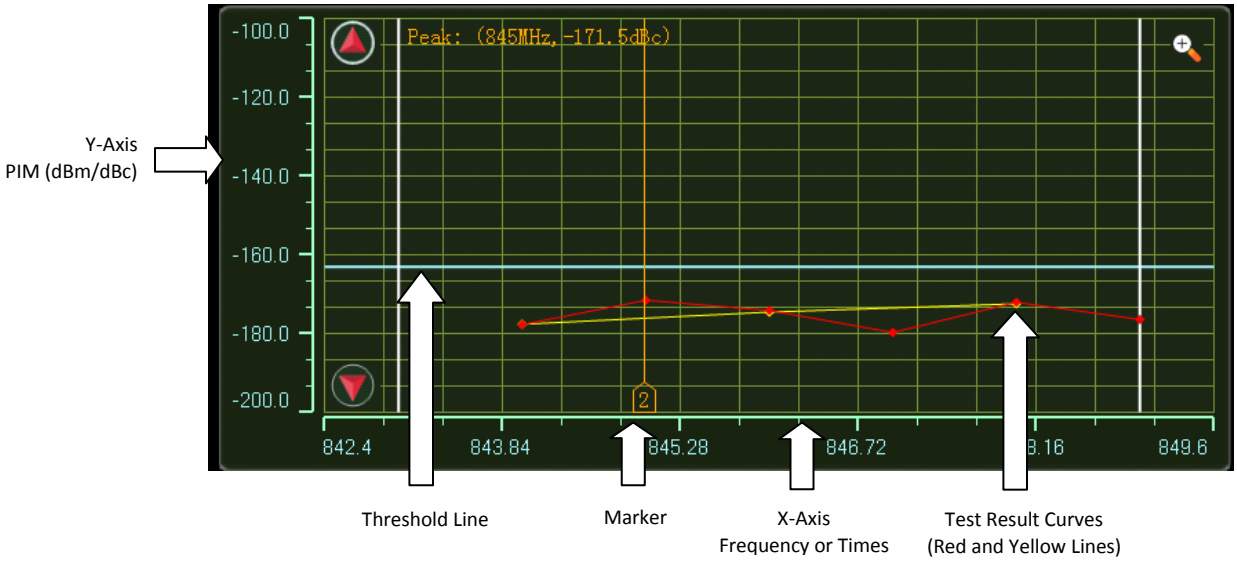


Figure 3-2 PIM Test Curve Section

- Test Curves: Yellow curve shows Frequency/Time Sweep PIM measurement when F1 sweeps
  Red curve shows Frequency/Time Sweep PIM measurement when F2 sweeps
  The number of test points can be defined by user (as described in **Chapter** 3.2)
- Marker: Mark the test point (or peak point) to show the test result with detail value
- X-Axis: Show the current test mode. Depending on frequency or time sweep modes user chooses, it will show detailed frequencies or times
- Y-Axis: Show the PIM Level
- Threshold Line: Pass/ Fail Criteria line which is defined by user (as described in **Chapter** 3.1.3)

3.1.3 Test Result Evaluation Section

There are 2 parts in Test Result Evaluation Section, Peak PIM and Pass/Fail Limits and Evaluation.

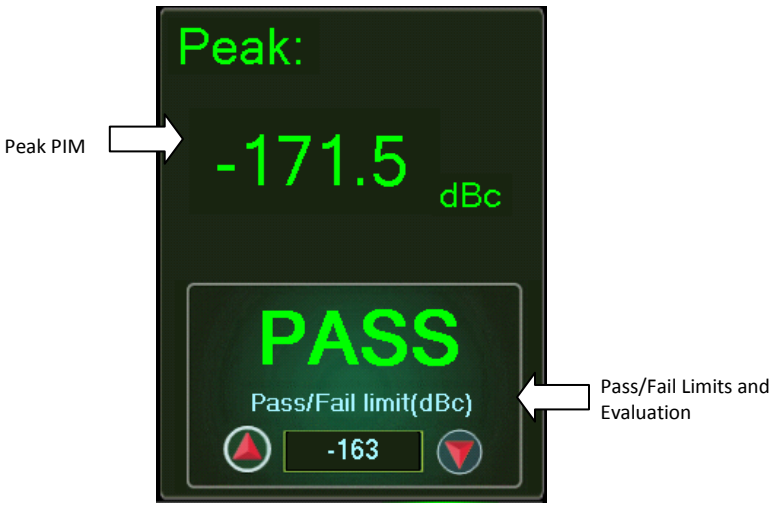
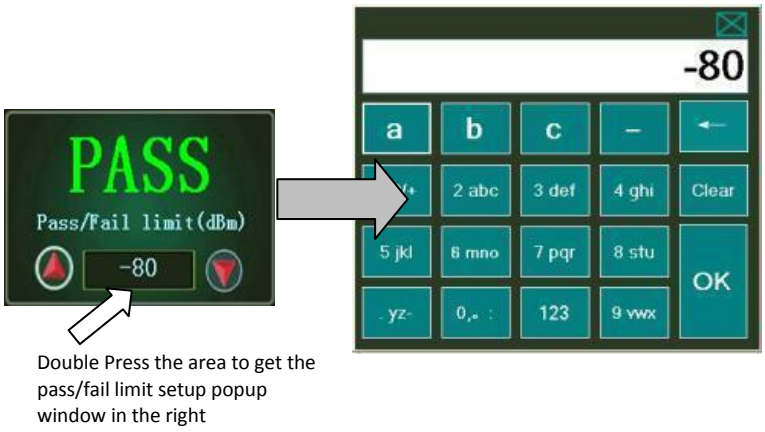


Figure 3-3 PIM Test Result Evaluation Section

- ✧ Peak PIM: Show the worst PIM value
- ✧ Pass/ Fail Limits and Evaluation: Setup Pass/Fail limit and Provide Pass/Fail Result



3.1.4 Test Mode Display Section

Test Mode Display Section (as shown in **Figure 3-4**) shows current test modes and detailed configured parameters of test carriers (F1 and F2).

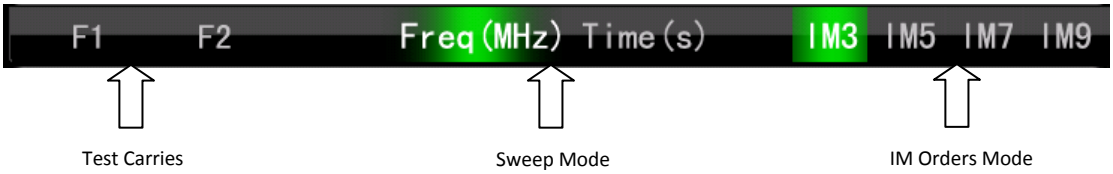
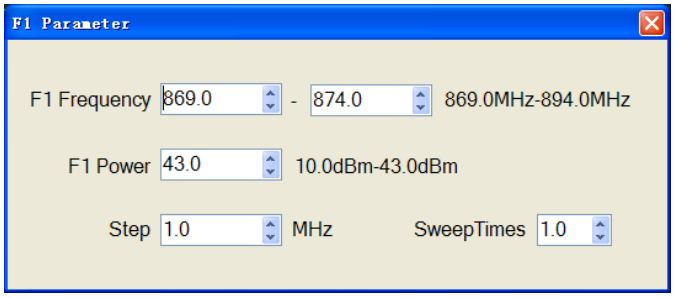


Figure 3-4 PIM Test Mode Display Section

3.1.4.1 Configured Parameters of Test Carriers

Upon press "**F1**" or "**F2**" softkey, following window will pop-up to show the detail configured parameters of **F1** or **F2 (unchangeable)**



3.1.4.2 Sweep Mode and IM (Intermodulation Product) Orders Mode

The Green bars in Sweep Mode and IM Orders Mode areas show the current sweep mode and IM orders under the test (as shown in **Figure 3-4**).

3.1.5 PIM Unit Option

In PIM Unit Option Section, press the PIM Unit which user wants to use. The Green bar in the section shows the current PIM Unit.

3.1.6 Test Report Section

As shown in **Figure 3-5**, there are 3 parts in Test Report Section, table of test result, General PIM Performance and Performance Monitoring of PA.

- ✧ Table of Test Result: Show the detailed PIM measurement result with table format
- ✧ General PIM Performance: Show the Maximum, Minimum and Average PIM result of the test
- ✧ PA performance Monitor: Show the exact power level, temperature and VSWR of each PA (F1 and F2). The sign will turn to red when there is PA alarm triggered.

Figure 3-5 PIM Test Report Section

3.1.7 Command Bar

Press the command softkeys for PIM test setup and control.

Figure 3-6 PIM Command Bar

- ✧ START: Start or Stop PIM Measurement
- ✧ PEAK: Show the Peak PIM
- ✧ SAVE: Save the test result
- ✧ READ: Read the saved test result
- ✧ SETTING: Setup for PIM Measurement

3.2 Setup for PIM Measurement

Press the "**SETTING**" softkey in the Command Bar as shown in below.

The "**Setting**" Window as shown in **Figure 3-7** will pop up. The Setting window is for setup of PIM measurement. All standard PIM measurement setup is set as default by manufacture. Press the "**Default**" button in the window to reset all the parameters back to default value.

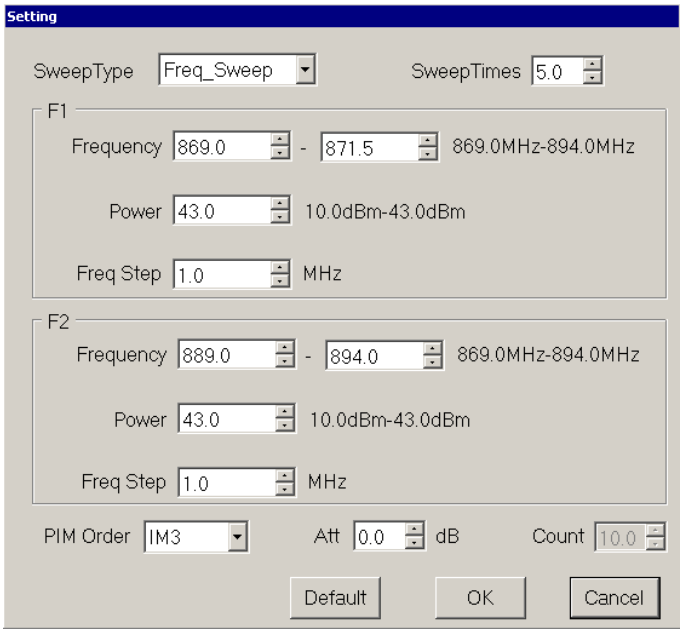
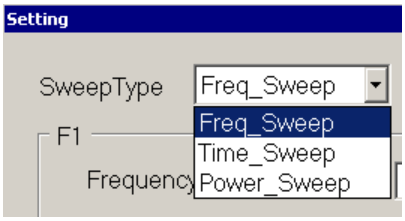


Figure 3-7 Setting Window for PIM Setup

3.2.1 Test Mode Setup

There are 3 test modes, Frequency Sweep, Time Sweep and Power Sweep



3.2.1.1 Frequency Sweep Mode

When under Frequency Sweep mode, the PIM Analyzer will sweep 2 RF carriers with defined frequency range and power level and measure the PIM performance.

3.2.1.2 Time Sweep Mode

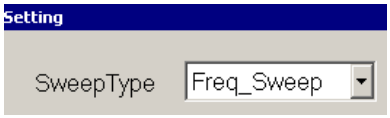
When under Time Sweep mode, the PIM Analyzer will generate user defined RF carriers and perform the PIM measurement by time.

3.2.1.3 Power Sweep Mode

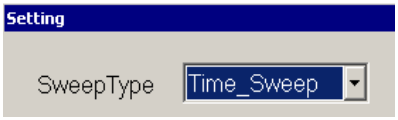
When under Power Sweep mode, the PIM Analyzer will generate user defined RF carriers with sweeping power range and step and perform the PIM measurement

3.2.1.4 Setup Test Mode

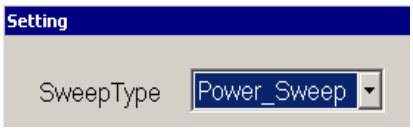
In "**Sweep Type**" option of Setting Window, when choosing "Freq_Sweep", the PIM measurement is Frequency Sweep Mode.



When choosing "**Time_Sweep**", the PIM measurement is set to be Time Sweep Mode.

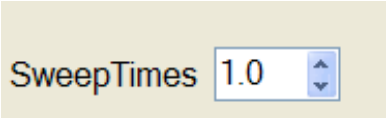


When choosing "**Power_Sweep**", the PIM measurement is set to be Power Sweep Mode.



3.2.2 Sweep Times Setup

In "**Sweep Times**" setup of the Setting Window, user can define the sweep times. More sweep times is chosen, more accurate the PIM measure will. But more sweep time requires longer PIM measurement time. The maximum sweep time is 100 times.



3.2.3 RF Carriers Parameter Setup

As shown in **Figure 3-8**, user can setup RF carrier parameters by changing the default Frequency, Power and Step values in **F1** and **F2** setup section.

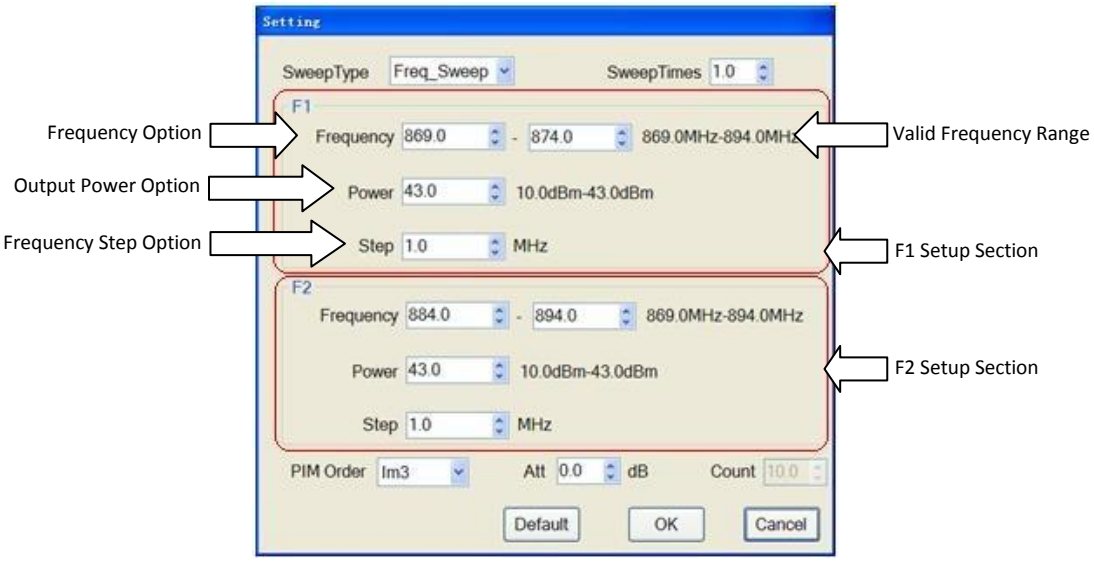


Figure 3-8 RF Carriers Setup Section

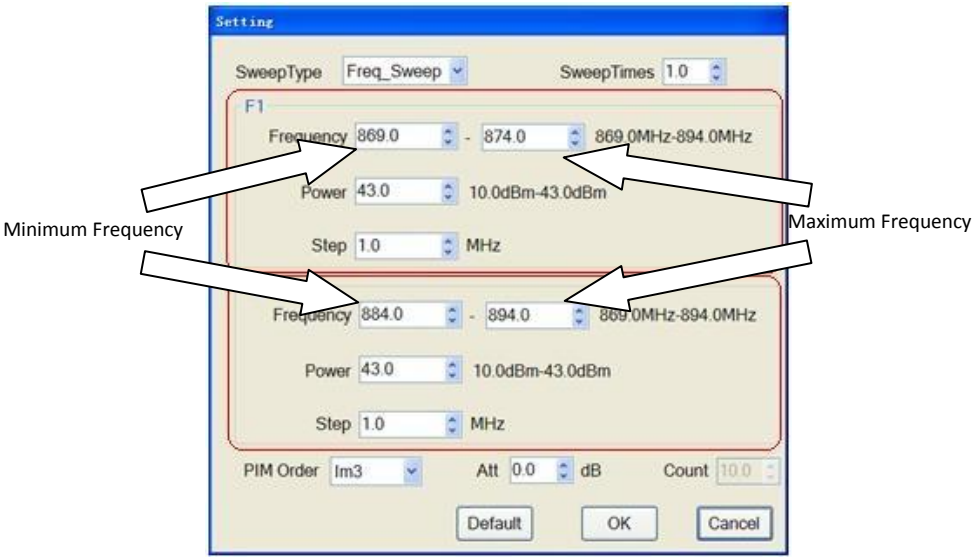
3.2.3.1 Frequencies Setup

User can set the frequency range of each RF carrier by changing the frequency options in **F1** and **F2** Setup Section. Depending on the model of JCIMA-P2, the valid frequency ranges (as shown in **Table 3-1**) are different.

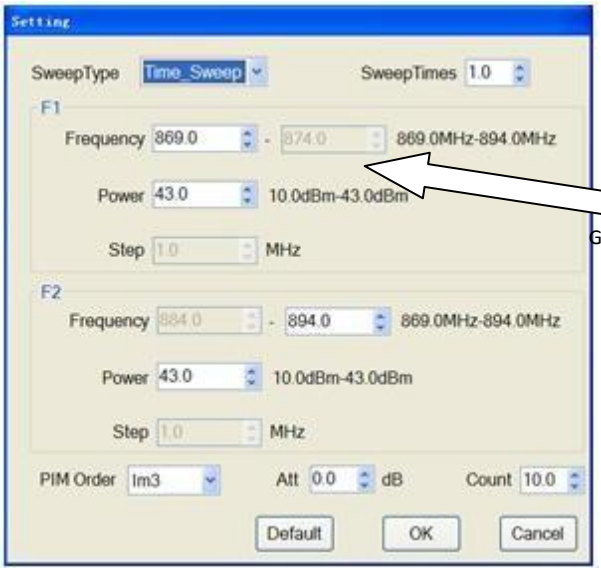
Model Number	Frequency Range (MHz)
JCIMA-700-P2	732 - 764
JCIMA-850-P2	869 - 894
JCIMA-900-P2	930 - 960
JCIMA-1800-P2	1805 - 1880
JCIMA-1900-P2	1930 - 1990
JCIMA-1921-P2	2110 - 2170
JCIMA-2000-P2	1930 - 1990 and 2110 - 2155
JCIMA-2600-P2	2620 – 2690

Table 3-1 Valid Frequency Range

- When under Frequency Sweep Mode, Frequency Option for both **F1** and **F2** has the minimum and maximum frequency setup options.



- When under Time Sweep Mode, only Minimum Frequency is available in Frequency Option area (the gray areas are not selectable).



3.2.3.2 Power Setup

In the Output Power Option Section (as shown in **Figure 3-8**), user can define customized carrier output power level. The valid output power range is from +10dBm to +43dBm. The minimum power step is 0.1dB.

3.2.3.3 Frequency Step Setup

The Frequency Step is used to setup the frequency sweep step when using Frequency Sweep Mode. User can customizes the frequency step via changing the setting in Frequency Step Option Section which is shown in **Figure 3-8.** The minimum frequency step is 0.1MHz.

When under time sweep mode, this option is not available and the selection area will turn gray.

3.2.4 Setup for PIM Orders

For different scenarios, 3rd Order PIM is not necessary the major reason causing the Wireless System performance issue. The 5th, 7th or even 9th PIM Orders could cause issues as well. JCIMA-P2 Multi-function PIM Analyzer allows user to measure different orders of PIM Product.

As shown in **Figure 3-9,** user can setup the PIM Order options for measurement of different PIM orders.

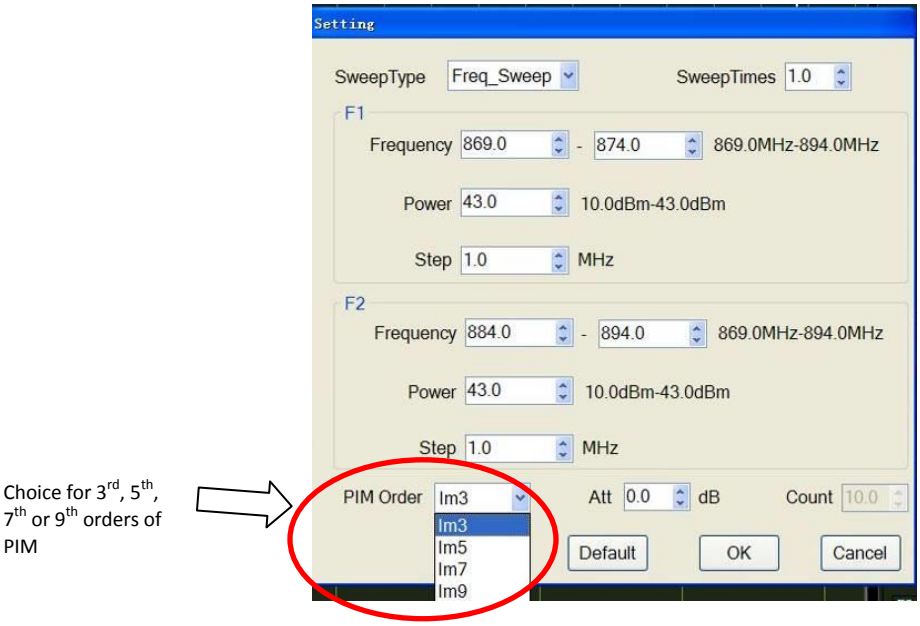


Figure 3-9 Setup for PIM Orders

After choosing the PIM orders, the frequency option will set back the manufacture defaultv alues automatically. The default frequency ranges for different orders are different.

Formula for PIM Orders:

IM3 = 2 * F1 – F2 or 2 * F2 – F1

IM5 = 3 * F1 – 2 * F2 or 3 * F2 – 2 * F1

IM7 = 4 * F1 – 3 * F2 or 4 * F2 – 3 * F1

IM9 = 5 * F1 – 4 * F2 or 5 * F2 – 4 * F1

3.2.5 Attenuation Setup

The attenuation setup is the attenuation level set for the internal spectrum analyzer. This feature is normally used for manufacture calibration. The default value (0.0) is not suggested to be changed.

3.2.6 Count Setup

The count option as shown in **Figure 3-10** is for Time Sweep Test Mode only (will turn gray for non-selectable under Frequency Sweep Mode). The Count option is to set the PIM test points (1 second per test point) for each time sweep cycle.

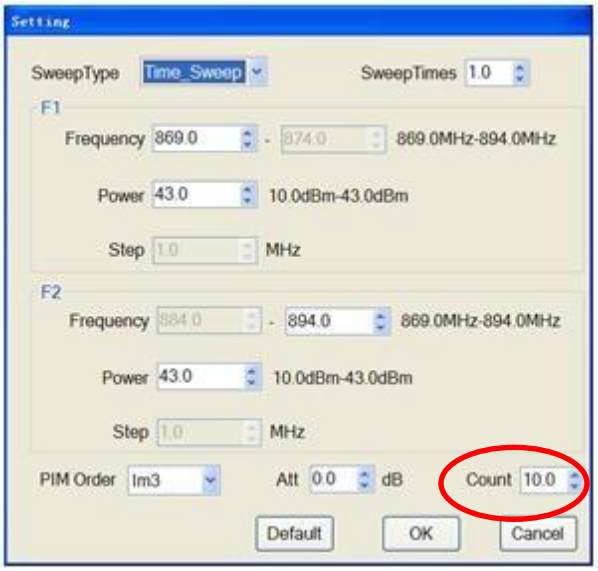


Figure 3-10 Count Option

3.2.7 Power Range and Power Step Setup

When under Power-Sweep mode, the Power Range and Power Step can be set as shown in **Figure 3-11**.

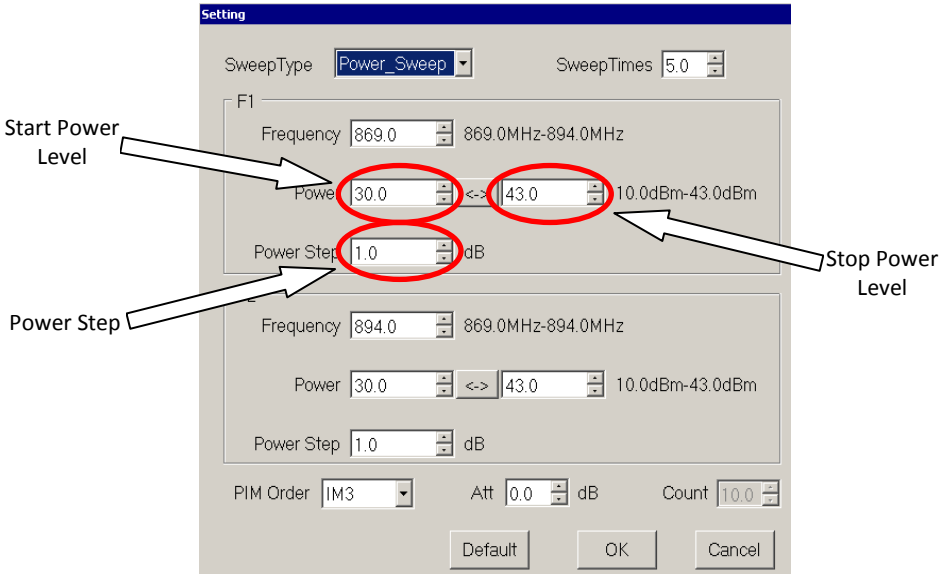


Figure 3-11 Count Option

3.2.8 Save or Set Back Default Setting

After setup, press "**OK**" button at the bottom of the setting window. System will save the setting and close the Setting Window automatically.

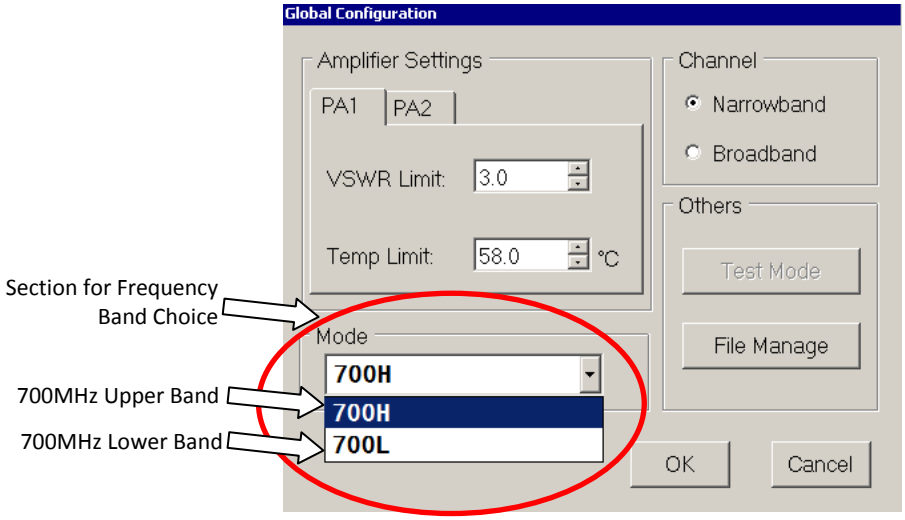
When user wants to get back the default setup, press the "**Default**" button at the bottom of the Setting Window. All parameters will set back to the default value.

3.2.9 Frequency Band setup (for Dual-band Model only)

For Dual-band PIM Analyzers, depends on the frequency band which user wants to test, user needs to define the band from changing the band setup under "CONFIG" function option window.

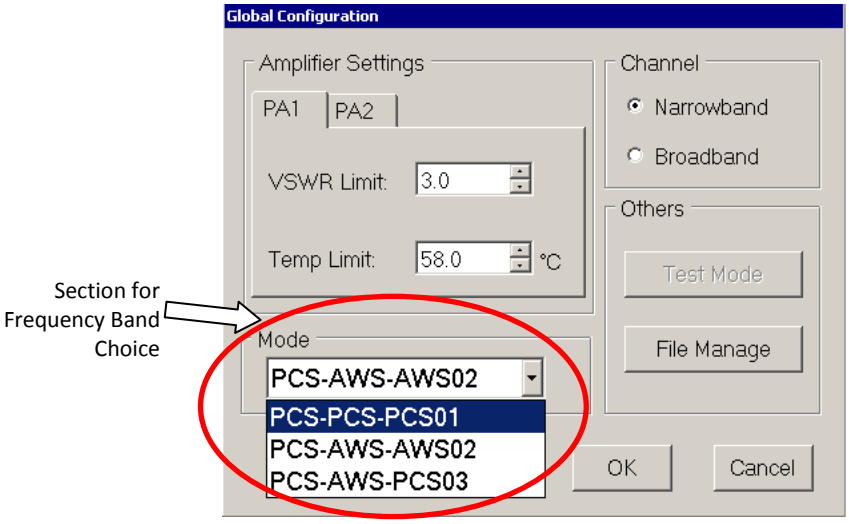
3.2.9.1 Band setup for JCIMA-700-P2

- Press the "**CONFIG**" softkey in Function Option Section. The **Global Configuration** window will pop up.
- Choose the band in "Mode" section and then click "OK" to complete band setup.



3.2.9.2 Band setup for JCIMA-1921-P2

- Press the "**CONFIG**" softkey in Function Option Section. The **Global Configuration** window will pop up.
- Choose the band in "Mode" section and then click "OK" to complete band setup



- ✧ PCS-PCS-PCS01: PCS TX + PCS TX and measure PIM at PCS RX band
- ✧ PCS-AWS-AWS02: PCS TX + AWS TX and measure PIM at AWS RX band
- ✧ PCS-AWS-PCS03: PCS TX + AWS TX and measure PIM at PCS RX band

Note: PCS TX - 1930MHz ~ 1990MHz
PCS RX - 1850MHz ~ 1910MHz
AWS TX - 2110MHz ~ 2155MHz
AWS RX - 1710MHz ~ 1755MHz

3.3 PIM Measurement

3.3.1 Preparation before Measurement

- As shown in **Figure 3-11**, connect the PIM Analyzer to Device or system under test and then to 50W Low PIM Termination via Low PIM test cable.
  - When running calibration for residual PIM, directly connect the DIN port to 50W Low PIM Termination with Low PIM Test cable as shown in the dot line in **Figure 3-12**.

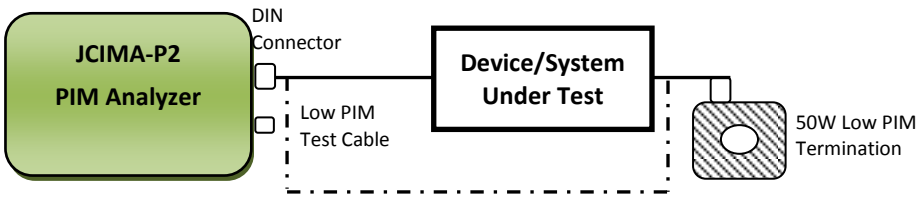


Figure 3-12 Setup for PIM Test

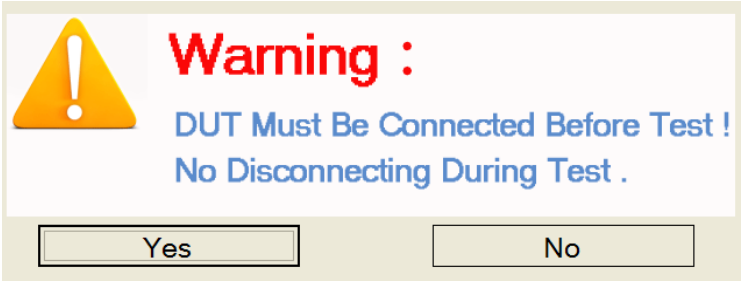
Please use the torque wrench to ensure the accuracy of measurement results.
Recommended torque: 5N-M for N type connector, 17.5-22N-M for 7/16 type connector.

When using torque wrench, please confirm the arrow sign is facing outside.
When hearing “click”, stop wrenching to provent over wrench.

- When using remote control terminal, please confirm the WiFi and PIM LEDs in PIM Analyzer front panel are on (Red).

3.3.2 Start and Stop PIM Measurement

Press the "**START**" button in the Command Bar, the following warning window will pop up to remind the PIM Analyzer needs to connect the Low PIM Terminator before the PIM measurement starts.



After confirming with press "**Yes**", the PIM measurement will be started. And the "**START**" and "**PEAK**" buttons will be turn green.

When pressing "**START**" button again, the PIM measurement will stop. The "**START**" and "**PEAK**" buttons will turn back to gray.

When system is under PIM Measurement function, user can also start and stop the PIM measurement from pressing the "**START**" button in the front panel of PIM Analyzer (first push to start, pressing again to stop).

The JCIMA-P2 has self-protection feature to prevent the high power output without proper termination. For PIM measurement with either GUI or front panel control, when output RF signals are not properly terminated, the system will automatically detect the problem, turn off the PA, and pop up the following alert windows on the test screen.

3.3.3 Calibration for PIM Measurement

3.3.3.1 Residual Intermodulation

To make sure the PIM Analyzer works properly, the residual intermodulation measurement needs to be performed after the PIM Analyzer is turned on.

- Use the setup shown in **Figure 3-12**
- Run PIM measurement 3 times to warm up the PIM Analyzer.
- Re-run PIM measurement 3 times. Confirm all 3 test results are constant.

The residual intermodulation should be less than -122dBm or -165dBc@43dBm*2 (Typical -168dBc).

Due to the natural wearing down for 7/16 connector, the residual intermodulation will eventually get worse. Therefore, the 7/16 Male to Female adapter is suggested to be used to protect the RF Out port. And when the residual intermodulation is worse than -165 dBc, the 7/16 Male to Female adapter is suggested to be replaced.

3.3.3.2 Calibration for Standard Adapter

The Standard Adapter (provided by manufacture) has very stable PIM performance. It's used to calibrate the PIM measurement accuracy of the PIM Analyzer.

There are 2 types of Standard Adapters, one with -80dBm PIM3@2*43dBm and another with -110dBm PIM3@2*43dBm, which has stable -80dBm and -110dBm 3rd order passive intermodulation performance.

- Connect the RF Out Port of PIM Analyzer to Standard Adapter and then Low PIM Termination via Low PIM test cable as shown in **Figure 3-13.**
- Run PIM measurement 3 times to warming up the PIM Analyzer.

- Re-run PIM measurement 3 times. Confirm all 3 test results are constant.

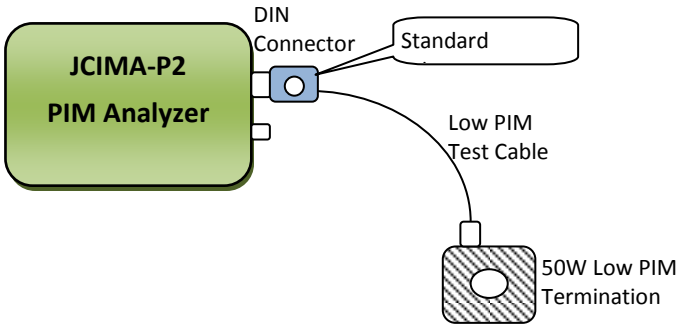


Figure 3-13 Calibration Setup for Standard Adapter

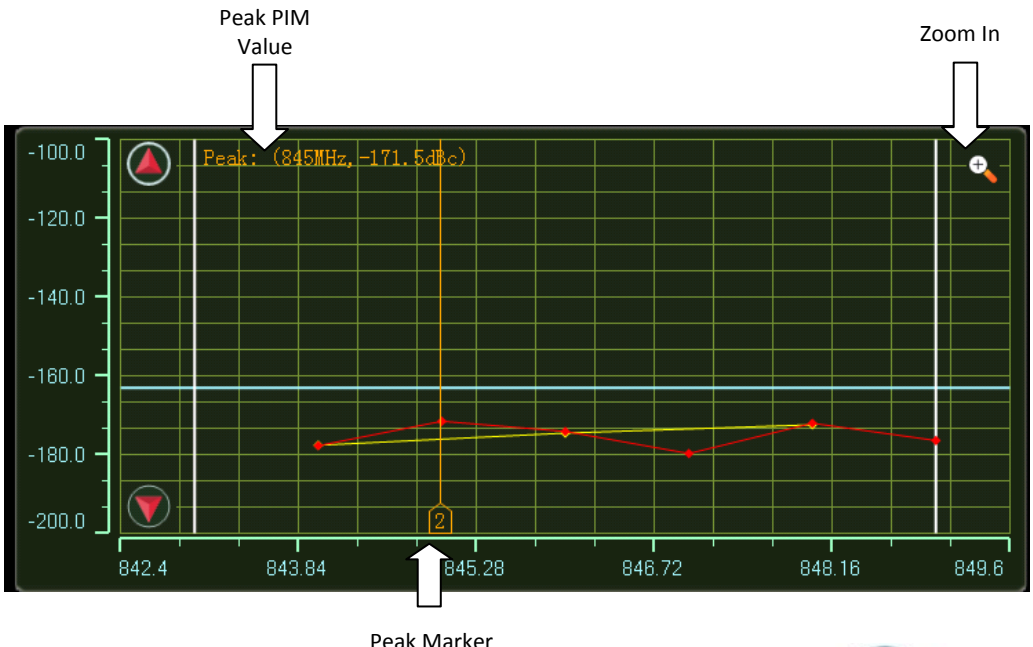
The PIM result should be less than ±3dB of the PIM3 value marked in the Standard Adapter. If the error is more than ±3dB, please contact the manufacture.

3.3.4 PIM Test Result

After PIM Measurement, the PIM test result will show as curve and report table as described in **Chapter** 3.1.2 and **Chapter** 3.1.6.

In the test curve section, the Peak PIM will be marked with after each PIM measurement.

The test result curve can be zoomed in by pressing the " " sign at the right top side of the Test Curve Section and then zoomed out by pressing " " at the same location.



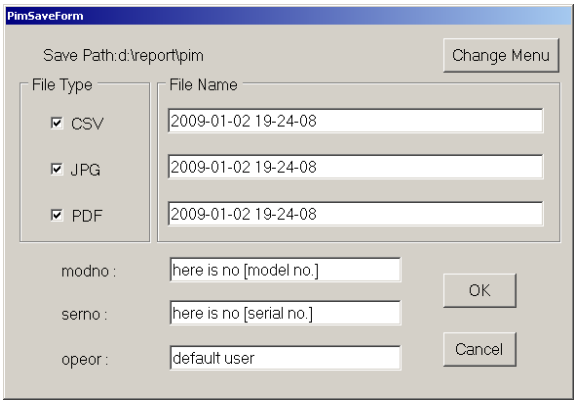
The peak PIM measurement result is also shown in the LED screen of PIM Analyzer front panel.

3.3.5 Save and Read PIM Test Result

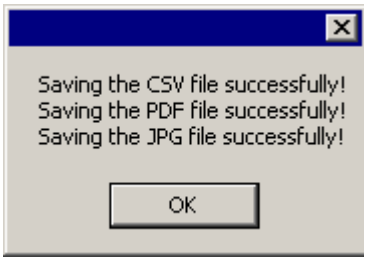
3.3.5.1 Save the PIM Test Result

- Press the "**SAVE**" softkey in Command Bar.

- The save setup window will pop up.



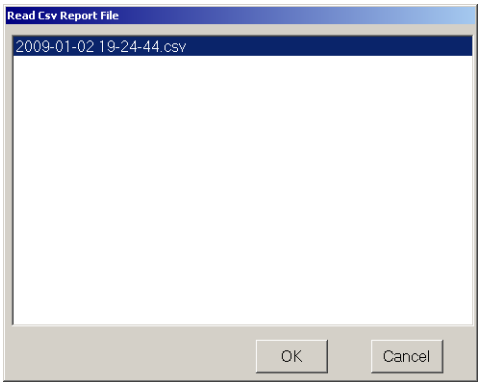
- Choose the file format – can be multiple logs with different formats.
- Specify the file name, model number ("**modno**"), serial number ("**serno**") and the tester's name ("**opeor**").
- Press "**OK**" button to implement "Save" command.
  - The test result will be saved under D:\Report\pim with date and time automatically (when using default name).
- After the test result being saved successfully, the follow window will pop up. Press "**OK**" button to quit the window.



3.3.5.2 Read Saved PIM Test Result

- Press the "**READ**" softkey in the Command Bar.

- The [Read CSV Report File] window will pop up.



- Select the file and press "**OK**" button to read the saved test result in PIM Measurement Function Window.

4. Distance to PIM and VSWR (RTF)

The Distance to PIM and VSWR Fault measurement provides the distance measurements for the 3rd order PIM and VSWR respectively.

The distance to PIM and VSWR measurements only work for the linear system. Any directional component in the system will impact the measurement results.

4.1 Operation Interface

To measure the distance to PIM or VSWR, press the "**RTF**" softkey in the test interface of JCIMA-P2.

Figure 4-1 shows the RTF operation interface of JCIMA-P2 Multifunction PIM Analyzer.

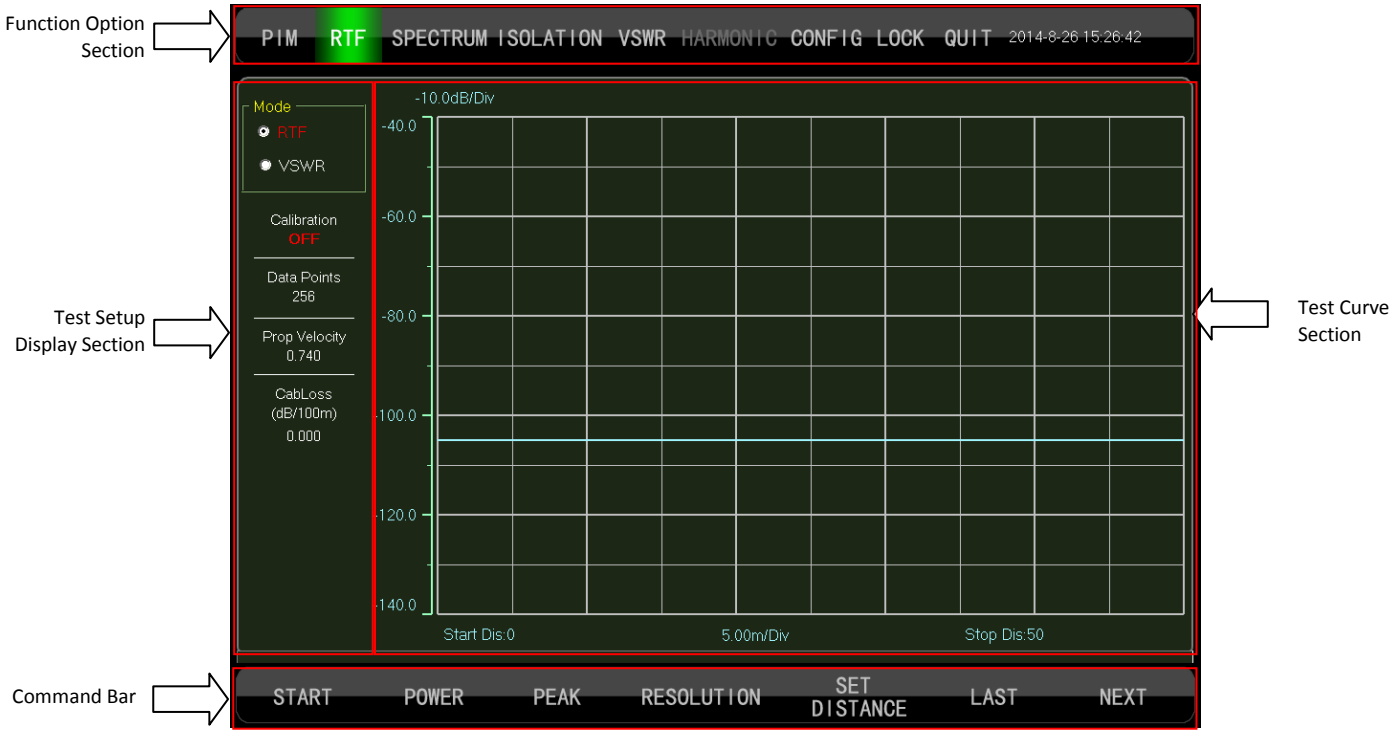


Figure 4-1 RTF Operation Interface

4.1.1 Function Option Section

Please refer **Chapter** 3.1.1 for Function Option Section.

4.1.2 Test Setup Display Section

The test setup display Section shows the detail setup parameter for the distance to PIM or VSWR measurements. Please refer **Section** 4.2 for the detail test parameter setup.

4.1.3 Test Curve Section

As shown in **Figure 4-2** and **4-3,** the RTF Test Curve Section shows the distance to PIM and VSWR measurement results respectively.

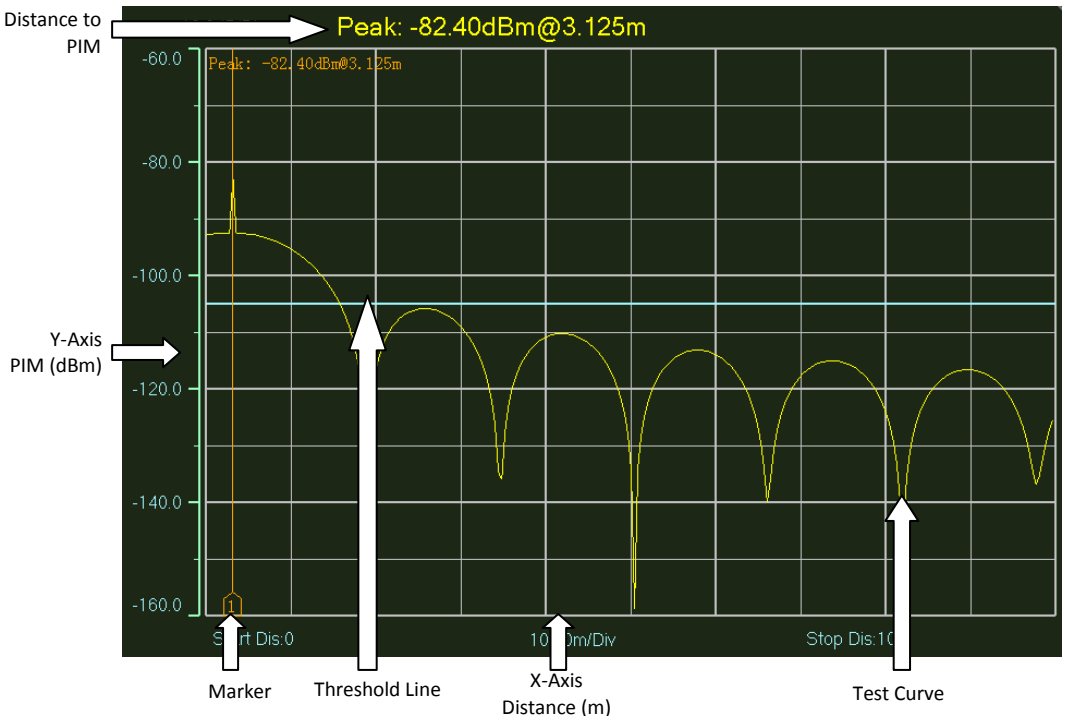


Figure 4-2 RTF PIM Test Curve Section

- ✧ Test Curve: Yellow curve shows the distance to PIM measurement result
- ✧ Marker: Mark the peak PIM fault which exceeds the threshold
- ✧ X-Axis: Show the distance in meters
- ✧ Y-Axis: Show the PIM Level in dBm
- ✧ Threshold Line: Pass/ Fail Criteria line which is defined by user

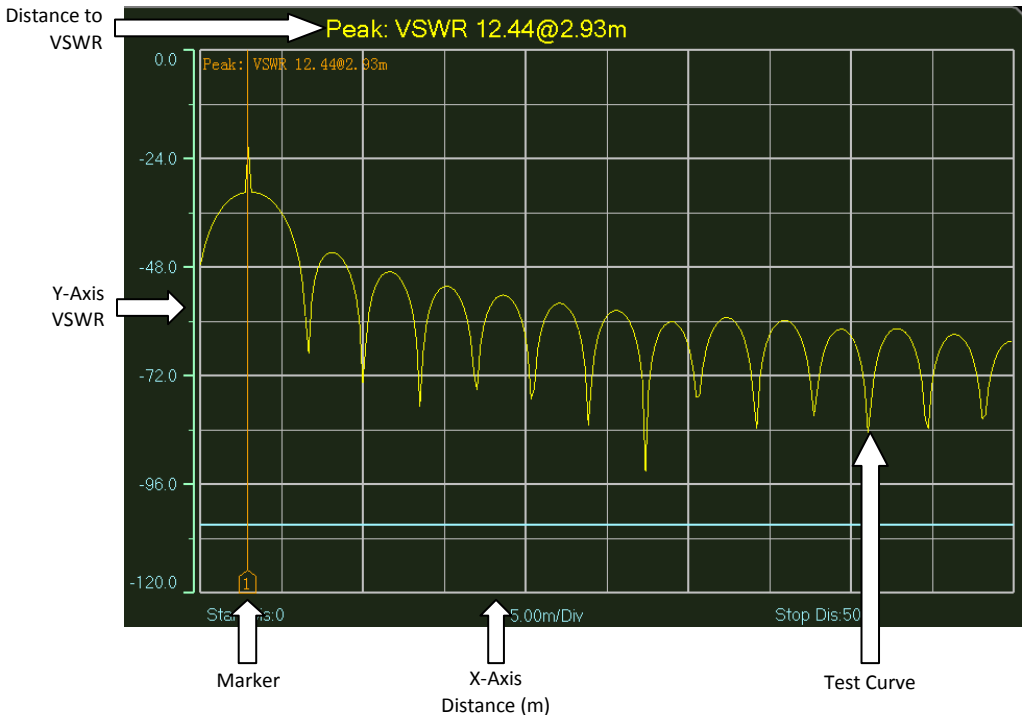


Figure 4-3 RTF VSWR Test Curve Section

- ✧ Test Curve: Yellow curve shows the distance to VSWR measurement result
- ✧ Marker: Mark the peak VSWR
- ✧ X-Axis: Show the distance in meters
- ✧ Y-Axis: Show the VSWR Level

4.1.4 Command Bar

RTF Command Bar is for RTF measurement setup, control and test result saving or reading.

- Press "**NEXT**" button to show the extended Command Bar.
- Press "**TOP**" or "**BACK**" button in the extended Command Bar to move back to original Command Bar.

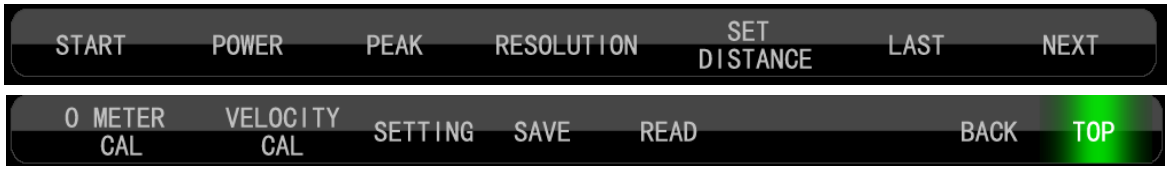


Figure 4-4 RTF Command Bar

- ✧ Start/ Stop: Start or Stop RTF Measurement
- ✧ Power: Power level setting for RTF measurement

- ✧ PEAK: Mark the Peak PIM or VSWR
- ✧ RESOLUTION: Setup the number of the test point
- ✧ SET DISTANCE: Setup the distance range
- ✧ LAST: Move to the last page of the Command Bar
- ✧ NEXT: Move to next page of Command Bar
- ✧ 0 METER CAL: Setup and start the calibration at 0 meter
- ✧ VELOCITY CAL: Calibration for velocity factor of RF cable under test
- ✧ SETTING: Setup for Y-Axis range, Velocity Factor, Cable Type, Cable Loss and Threshold
- ✧ SAVE: Save the test result
- ✧ READ: Read the saved test result
- ✧ BACK: Back to former page of Command Bar
- ✧ TOP: Back to the first page of Command Bar

4.2 Setup for RTF Measurement

4.2.1 Mode Setup for RTF Measurement

Under RTF function, there are 2 modes, distance to 3rd Order PIM measurement (**RTF**) and distance to VSWR measurement (**VSWR**). Click the "**RTF**" or "**VSWR**" options under "**Mode**" section to setup the measurement mode as shown in **Figure 4-5.**

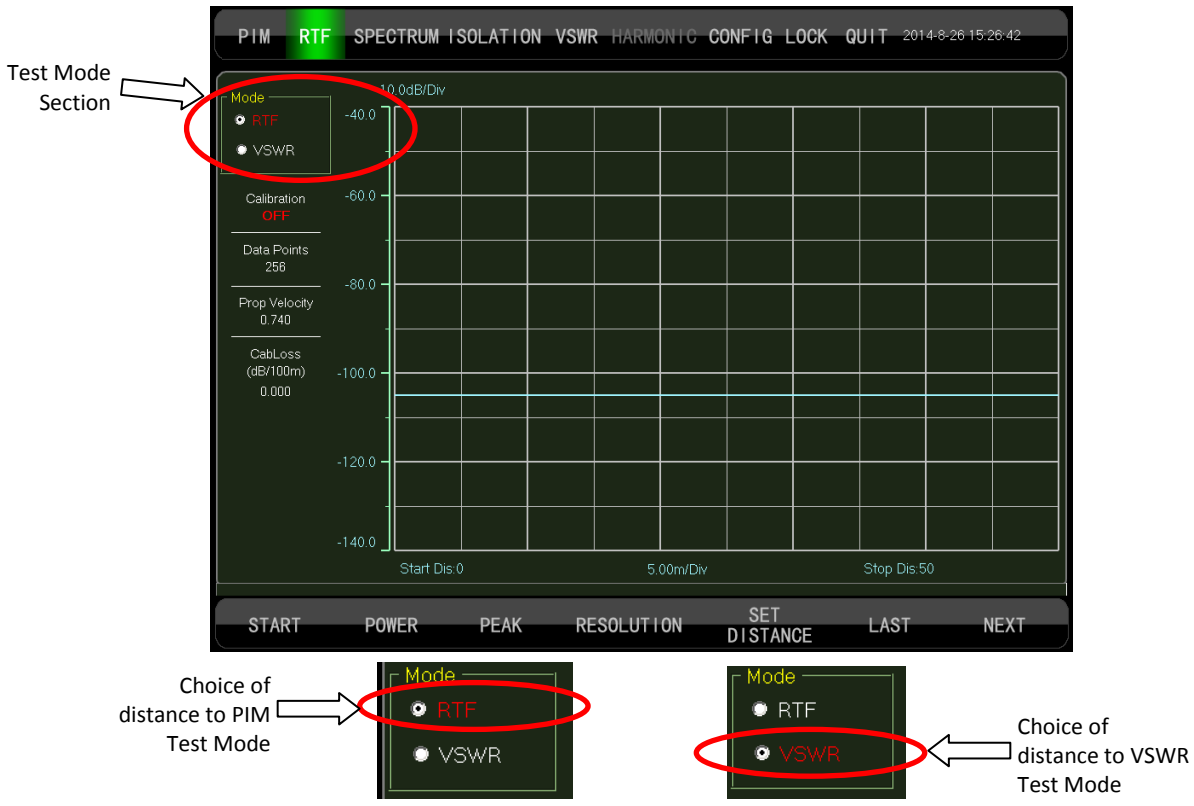
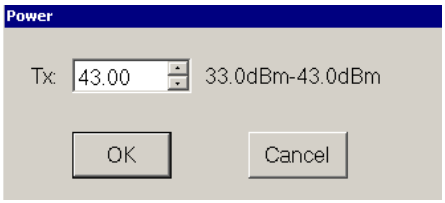


Figure 4-5 0 Test Mode Setup for RTF Function

4.2.2 Setup for Power Level

Press the "**Power**" softkey in the Command Bar. The Power window will pop up as shown in below.



- The TX frequency range (for F) and 3rd Order PIM frequency are shown in **Table 4-1**.
- The "Tx" is for transmission power setup. The power range is from 33dBm to 43dBm.

Spectrum	TX Frequency Range (MHz)	3rd order PIM Frequency Range
JCIMA-700-P2	732 - 764	698 - 716 779.5 - 804.5
JCIMA-850-P2	869 - 894	824 - 849
JCIMA-900-P2	930 - 960	885 - 915
JCIMA-1800-P2	1805 - 1880	1710 - 1785
JCIMA-1900-P2	1930 - 1990	1850 - 1910
JCIMA-1921-P2	1930 - 1990 and 2110 - 2155	1710 - 1910
JCIMA-2000-P2	2110 - 2170	1920 - 2060
JCIMA-2600-P2	2620 - 2690	2500 - 2570

Table 4-1 TX Frequency and 3rd Order PIM Frequency Range for RTF

4.2.3 Setup for Resolution

Press "**RESOLUTION**" softkey in Command Bar to set up the number of test points for RTF measurement.

4.2.4 Setup for Distance Range

Press "**SET DISTANCE**" softkey in Command Bar. The Set Distance window will pop up for setting the distance range which user wants to measure.

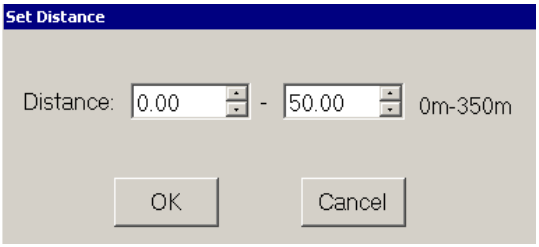


Figure 4-6 Set Distance Setup Window

4.2.5 Calibration at 0 Meter

4.2.5.1 Calibration at 0 meter under RTF Test Mode

When under "**RTF**" test mode, press the "**0 METER CAL**" softkey in Command Bar. The following window will pop up. Input the value of the Standard Adapter used by Calibration.

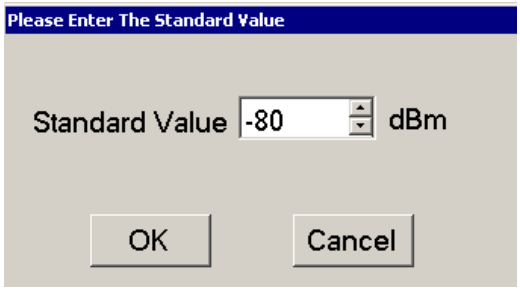


Figure 4-7 0 Meter Calibration Setup Window for RTF Test Mode

After pressing "**OK**" button, the Calibration process will be started and the pop up window will be closed automatically. Please refer **Chapter** 4.3.2 for detail process of Calibration.

4.2.5.2 Calibration at 0 meter under VSWR Test Mode

When under "**VSWR**" test mode, press the "**0 METER CAL**" softkey in Command Bar. Stay with the default value unless there is specific instruction from manufacture document.

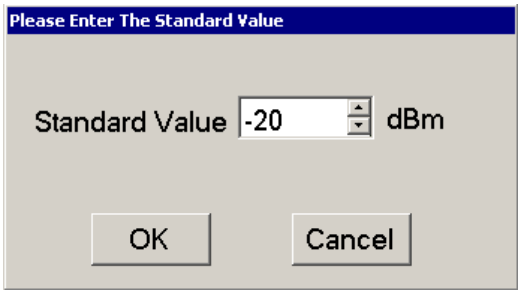


Figure 4-8 0 Meter Calibration Setup Window for VSWR Test Mode

After pressing "**OK**" button, the Calibration process will be started and the pop up window will be closed automatically. Please refer **Chapter** 4.3.2 for detail process of Calibration.

4.2.6 Calibration for Velocity Factor

Press the "**VELOCITY CAL**" softkey in Command Bar. The following window will pop up. Input the type and length of the RF cable under test.

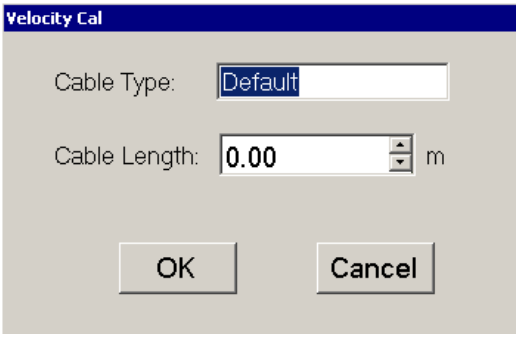
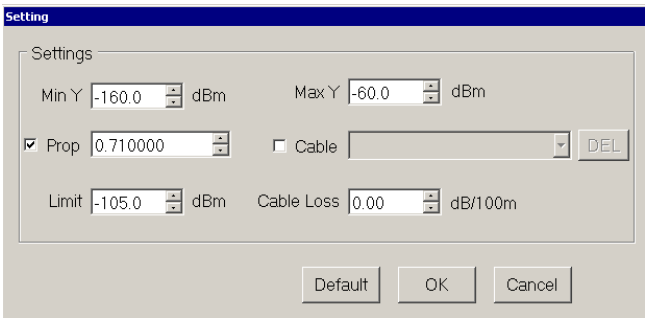


Figure 4-9 Velocity Factor Calibration Setup Window

After pressing "**OK**" button, the Calibration process will be started and the pop up window will be closed automatically. Please refer **Chapter** 4.3.2 for detail process of Calibration.

4.2.7 SETTING Softkey

Press the "**SETTING**" softkey in Command Bar, the Setting window will pop up as shown in below.



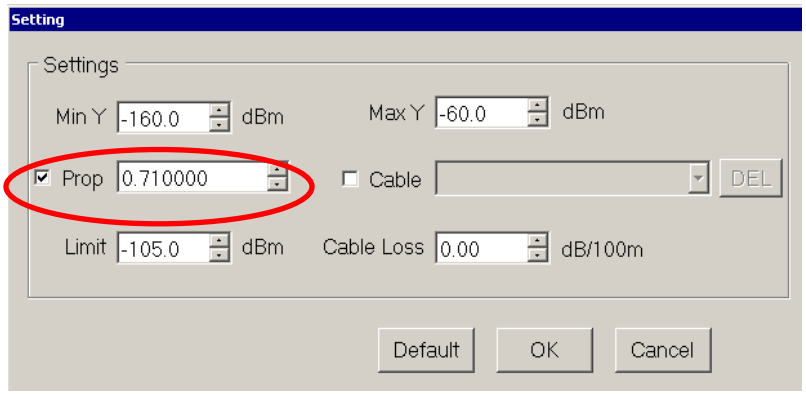
Press "**OK**" button to save and exit Setting Window.

4.2.6.1 Setup for Y-Axis Range

Input the minimum and maximum PIM value in "**Min Y**" and "**Max Y**" respectively to set up the Y-Axis display range.

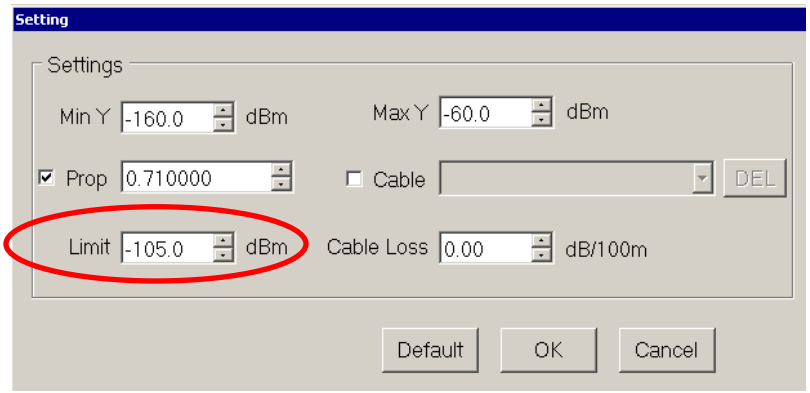
4.2.6.2 Setup for Velocity Factor

In order to make the distance to PIM fault measurement more accurate, when user knows the velocity factor of the RF cable under test, input the velocity factor in the "**Prop**" option. If user doesn't know the velocity factor of the RF cable under test, please leave it as default value (0.71).



4.2.6.3 PIM Fault Threshold Setup

In "**Limit**" option as shown in below, user can set the PIM fault threshold for the measurement.



4.2.6.4 Cable Loss Setup

To make the distance measurement more accurate, user needs to input the cable loss (dB/100 meters) in "**Cable Loss**" option.

4.3 Distance to PIM Fault Measurement

4.3.1 Preparation before Measurement

4.3.1.1 Preparation for distance to PIM Measurement

- Connect the PIM Analyzer to system under test and then to 50W Low PIM Termination via Low PIM test cable as shown in **Figure 4-10**.

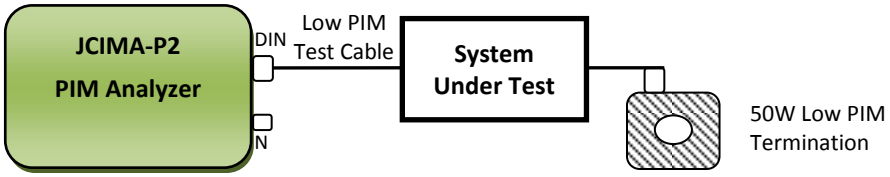


Figure 4-10 Setup for Distance to PIM

Please use the torque wrench to ensure the accuracy of measurement results.

Recommended torque: 5N-M for N type connector, 17.5-22N-M for 7/16 type connector.

4.3.1.2 Preparation for distance to VSWR Measurement

- Connect the PIM Analyzer to system under test and then to 50W Low PIM Termination via Low PIM test cable as shown in **Figure 4-11**.

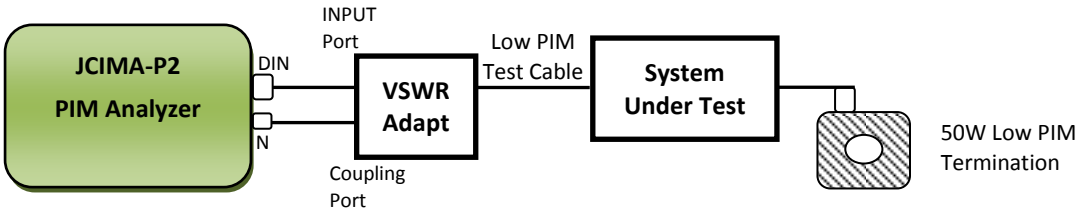


Figure 4-11 Setup for Distance to VSWR

- When using remote control terminal, please confirm only WiFi LED in PIM Analyzer front panel is on (Red) and the LED screen shows "***1111***".

4.3.2 Calibration for Distance to PIM Fault Measurement

4.3.2.1 0 Meter Calibration for RTF Test Mode

- Connect the RF Out Port of PIM Analyzer to Standard Adapter and then Low PIM Termination via Low PIM test cable as shown in **Figure 4-12.**

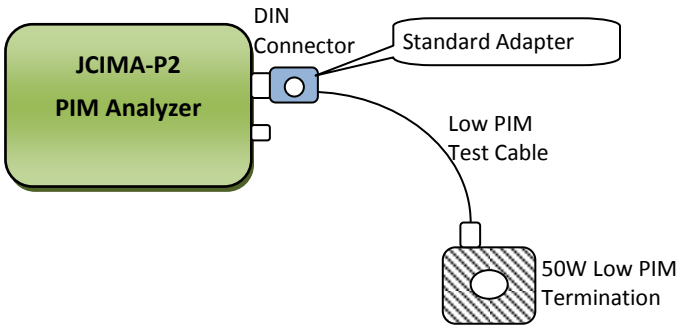
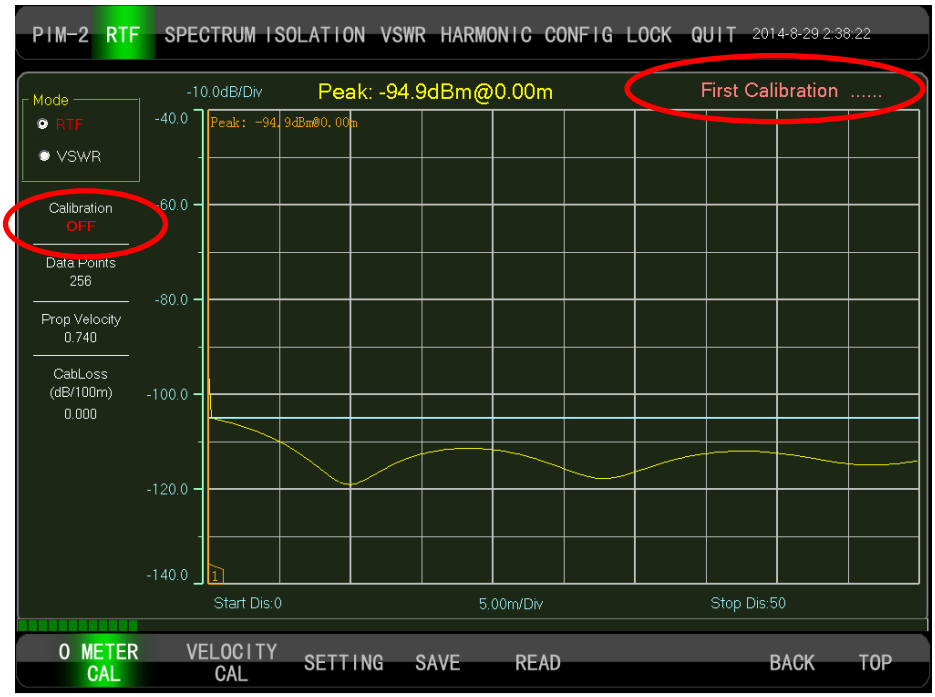
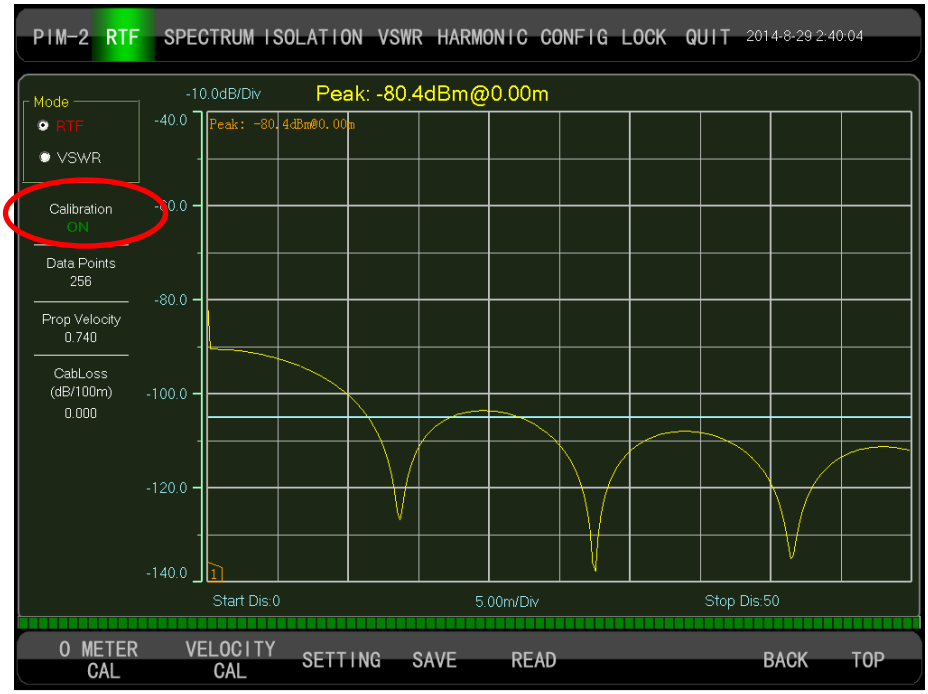


Figure 4-12 0 Meter Calibration Setup for distance to PIM

- Press "**0 METER CAL**" softkey in RTF Command Bar as shown in **Figure 4-4**.
- Input the value marked in the Standard Adapter to the pop up window (as shown in **Chapter 4.2.5.1**) and then press "**OK"** button to start the calibration.
- During the Calibration, the "Calibration" in Test Setup Display Section shows "**OFF**" and the system shows the calibration status at the top right corner of the Test Curve Section ("**First Calibration…..**" then "**Second Calibration….**").



- After Calibration completes, the "**Calibration**" in Test Setup Display Section turns to "ON".



- The 0 meter calibration is mandatory before RTF measurement. Without 0 meter calibration, the distance to PIM measurement can't be started.

4.3.2.2 0 Meter Calibration for VSWR Test Mode

- Connect the RF Out Port of PIM Analyzer to Standard Adapter and then Low PIM Termination via Low PIM test cable as shown in **Figure 4-13.**

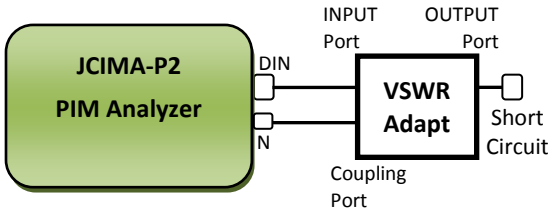
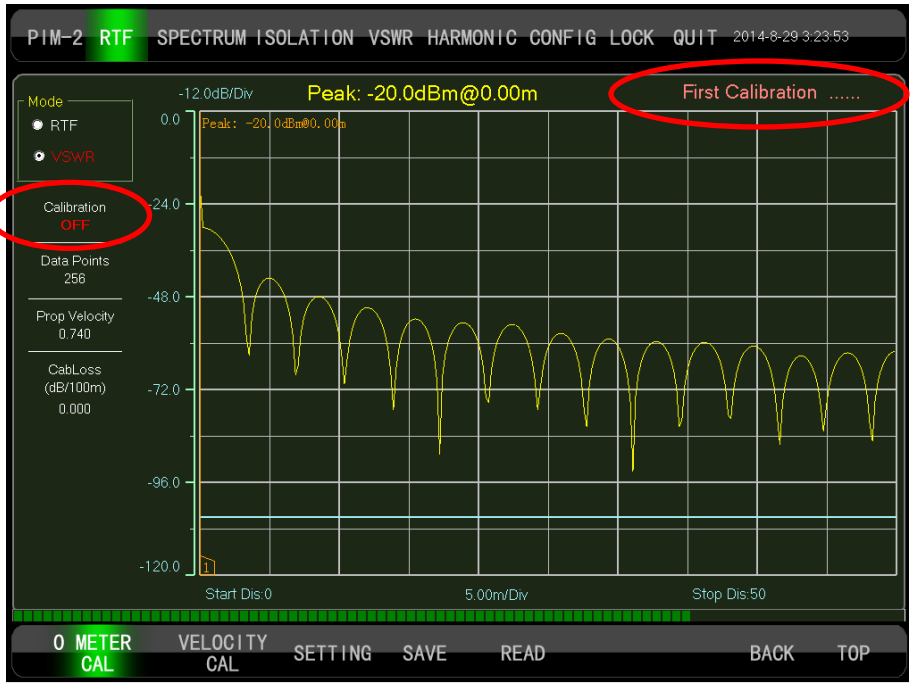
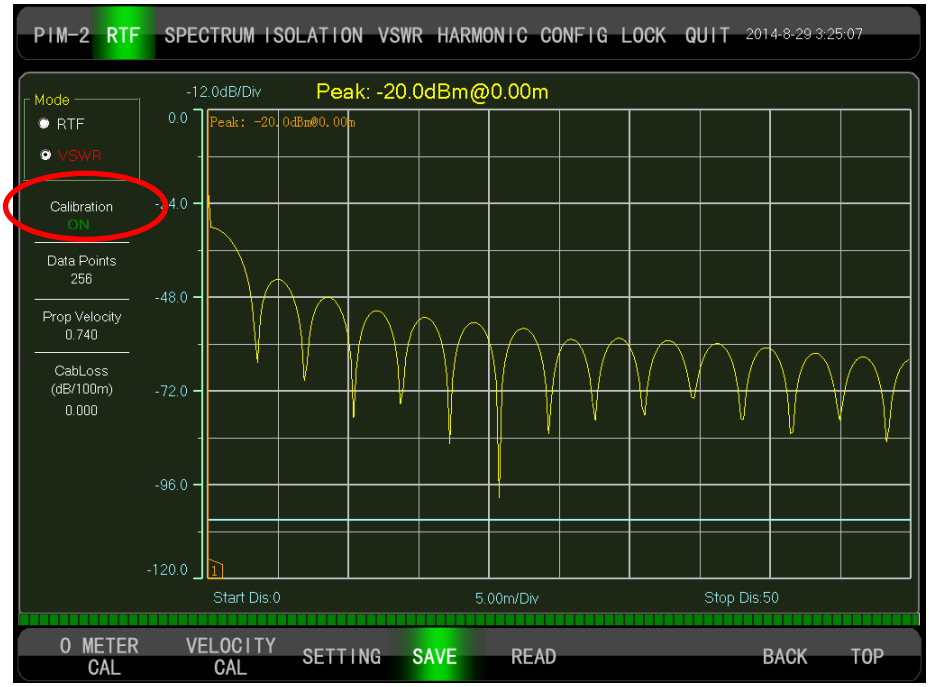


Figure 4-13 0 Meter Calibration Setup for distance to VSWR

- Press "**0 METER CAL**" softkey in RTF Command Bar as shown in **Figure 4-4**.
- Input the value marked in the Standard Adapter to the pop up window (as shown in **Chapter 4.2.5.2**) and then press "**OK"** button to start the calibration.
- During the Calibration, the "Calibration" in Test Setup Display Section shows "**OFF**" and the system shows the calibration status at the top right corner of the Test Curve Section ("**First Calibration…..**" then "**Second Calibration….**").



- After Calibration completes, the "**Calibration**" in Test Setup Display Section turns to "ON".



- The 0 meter calibration is mandatory before RTF measurement. Without 0 meter calibration, the distance to VSWR measurement can't be started.

4.3.2.3 *Velocity Factor Calibration*

When the velocity factor of the RF cable under test is unknown, user can measure the velocity factor via velocity factor calibration.

- Connect the RF Out Port of PIM Analyzer to Standard Adapter and then Low PIM Termination via Low PIM test cable as shown in **Figure 4-12**.

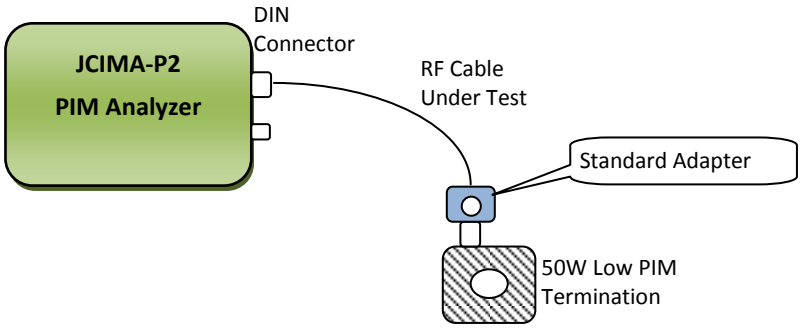
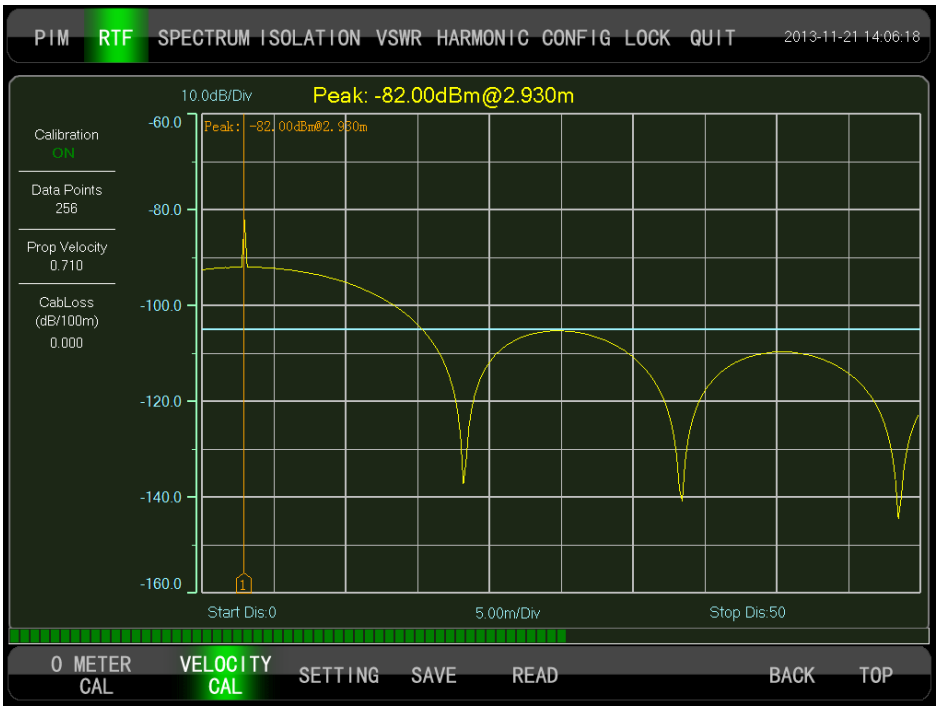


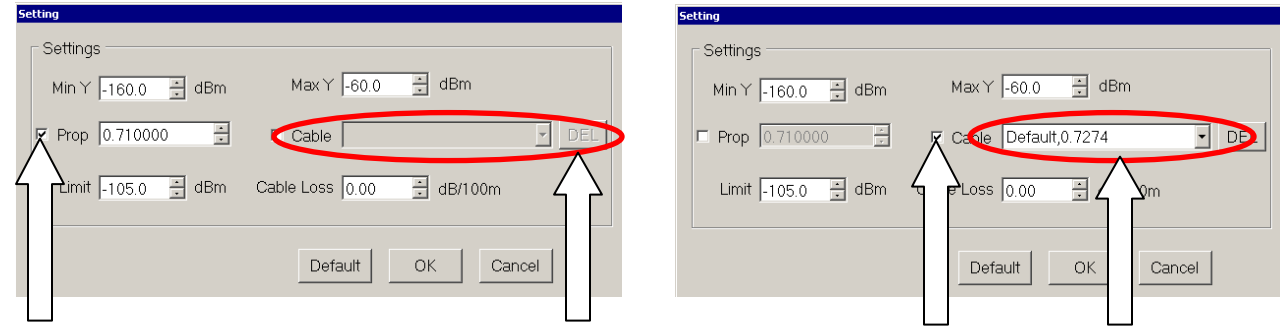
Figure 4-14 Velocity Factor Calibration Setup

- Press "**VELOCITY CAL**" softkey in RTF Command Bar as shown in **Figure 4-4**.
- Input the type and length of the RF cable under test in the pop up window and then press "**OK"** button to start the calibration.



- When system starts the velocity calibration, the "**VELOCITY CAL**" softkey will turn to green. And the softkey will turn back to normal when calibration complete.

- After velocity calibration, the measured velocity factor will be stored in the cable field in Setting window.
- User can choose the velocity factor by enabling "**Prop**" (for customized velocity factor) or "**Cable**" (measured velocity factor by velocity calibration).



4.3.3 Start and Stop Measurement

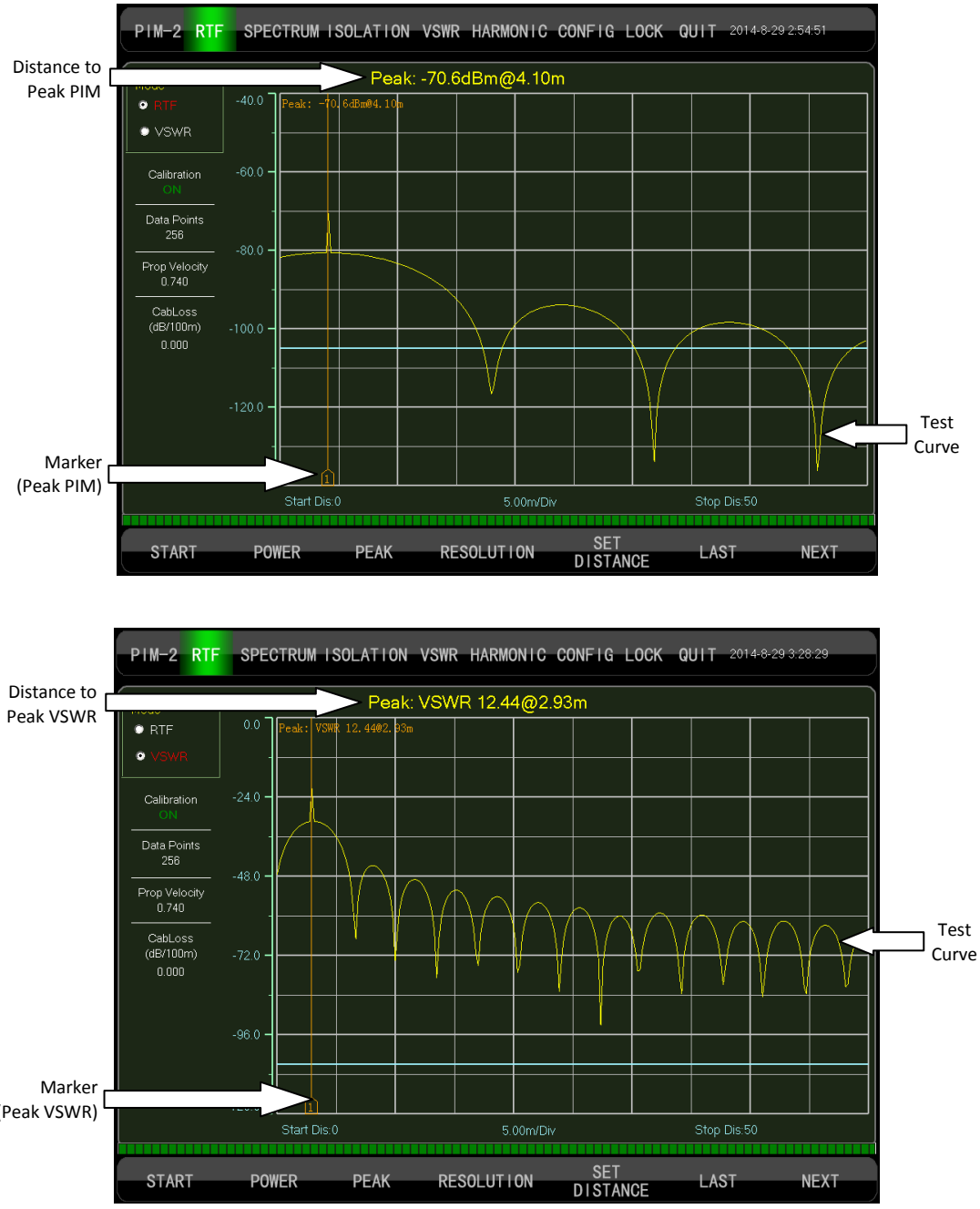
After the calibration, press the "**START**" button in the Command Bar to start the measurement. The "START" botton will change to "STOP" button. During the measurement, both the "**STOP**" button will and "**PEAK**" buttons will turn to green as show in the figure below.

Press "**STOP**" button any time during the test to stop the measurement

The Command Bar will get back to normal after the meaurement is completed or stopped.

4.3.4 Distance to PIM and VSWR Test Result

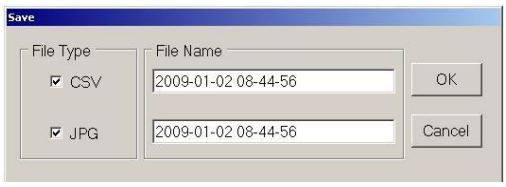
After completing the distance to PIM or VSWR measurement, the test result will be shown with both test curve and Peak PIM or VSWR with distance at the top of Test Curve Section.



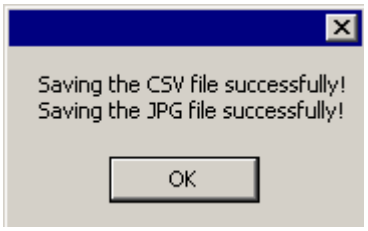
4.3.5 Save and Read RTF Test Result

4.3.5.1 Save the Test Result

- Press the "**SAVE**" softkey in Command Bar.
- The save setup window will pop up.

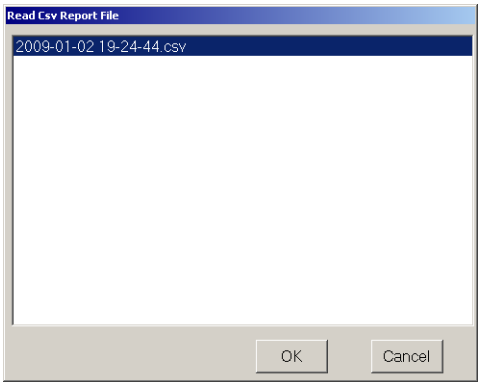


- Choose the file format – can be multiple logs with different formats.
- Specify the file name then press "**OK**" button to execute "Save" command.
  - The test result will be saved under D:\Report\rtf with date and time automatically (when using default name).
- After the test result is saved successfully, the follow window will pop up. Press "**OK"** button to quit the window.



4.3.5.2 Read Saved Test Result

- Press the "**READ**" softkey in the Command Bar.
- The "Read CSV Report File" window will pop up.



- Select the file and Press "**OK**" button to read the saved test result.

5. Spectrum Analyzer

The JCIMA-P2 supports Spectrum Analyzer function, which can provide the spectrum measurement. During the test, this feature can be used for specific spectrum scan, carrier power or RF environment emission scan.

The detail specification of the Spectrum Analyzer function is shown as below

- ✧ Frequency Range: 100MHz – 3GHz
- ✧ Noise Floor: -135dBm/1KHz(Receiving Band), -120dBm/1KHz (Wide band)
- ✧ Resolution Band Width: 1KHz/10KHz/100KHz
- ✧ Dynamic Range: 70dB
- ✧ Attenuation: 0/10/20/30/40dB
- ✧ Amplitude precision: ±1 dB
- ✧ Frequency Precision: 2ppm

5.1 Operation Interface

To use the spectrum analyzer function, press the "**SPECTRUM**" softkey in the Function Option Section.

Figure 5-1shows the Spectrum Analyzer operation interface of JCIMA-P2 Multifunction PIM Analyzer.

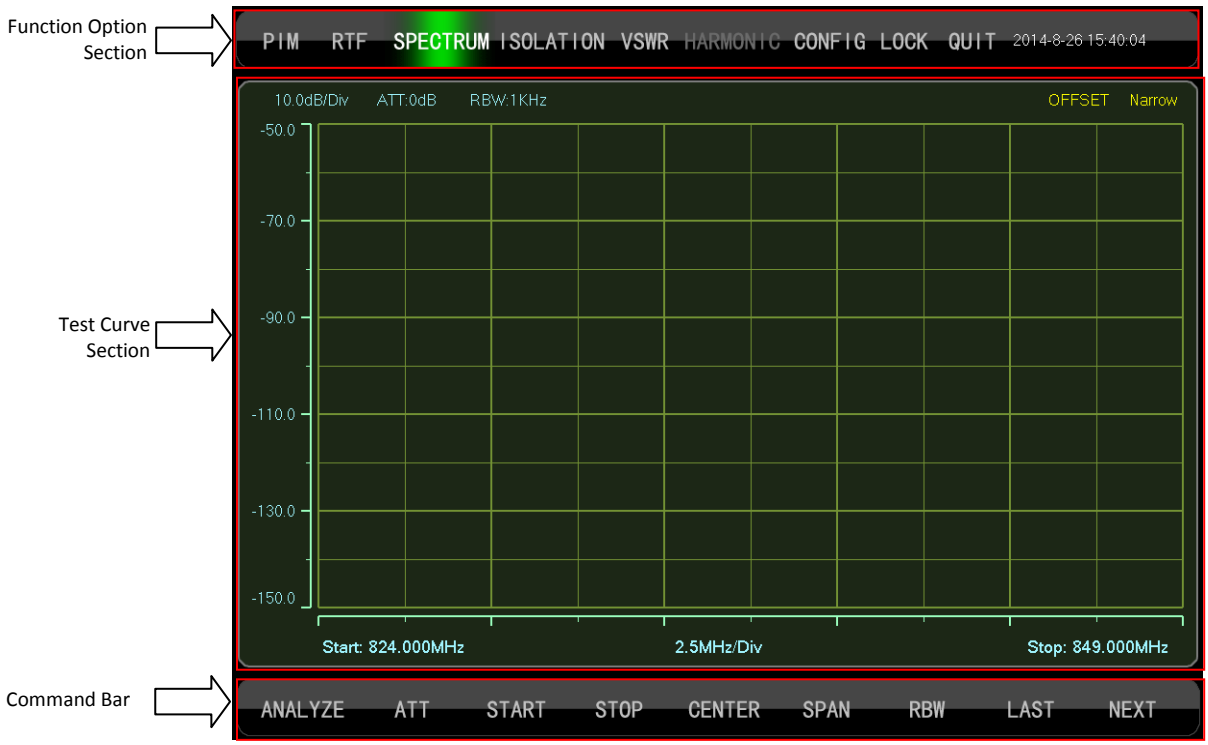


Figure 5-1 Spectrum Analyzer Operation Interface

5.1.1 Function Option Section

Please refer **Chapter** 3.1.1 for Function Option Section.

5.1.2 Test Curve Section

As shown in **Figure 5-2**, the Test Curve Section shows the Spectrum measurement result.

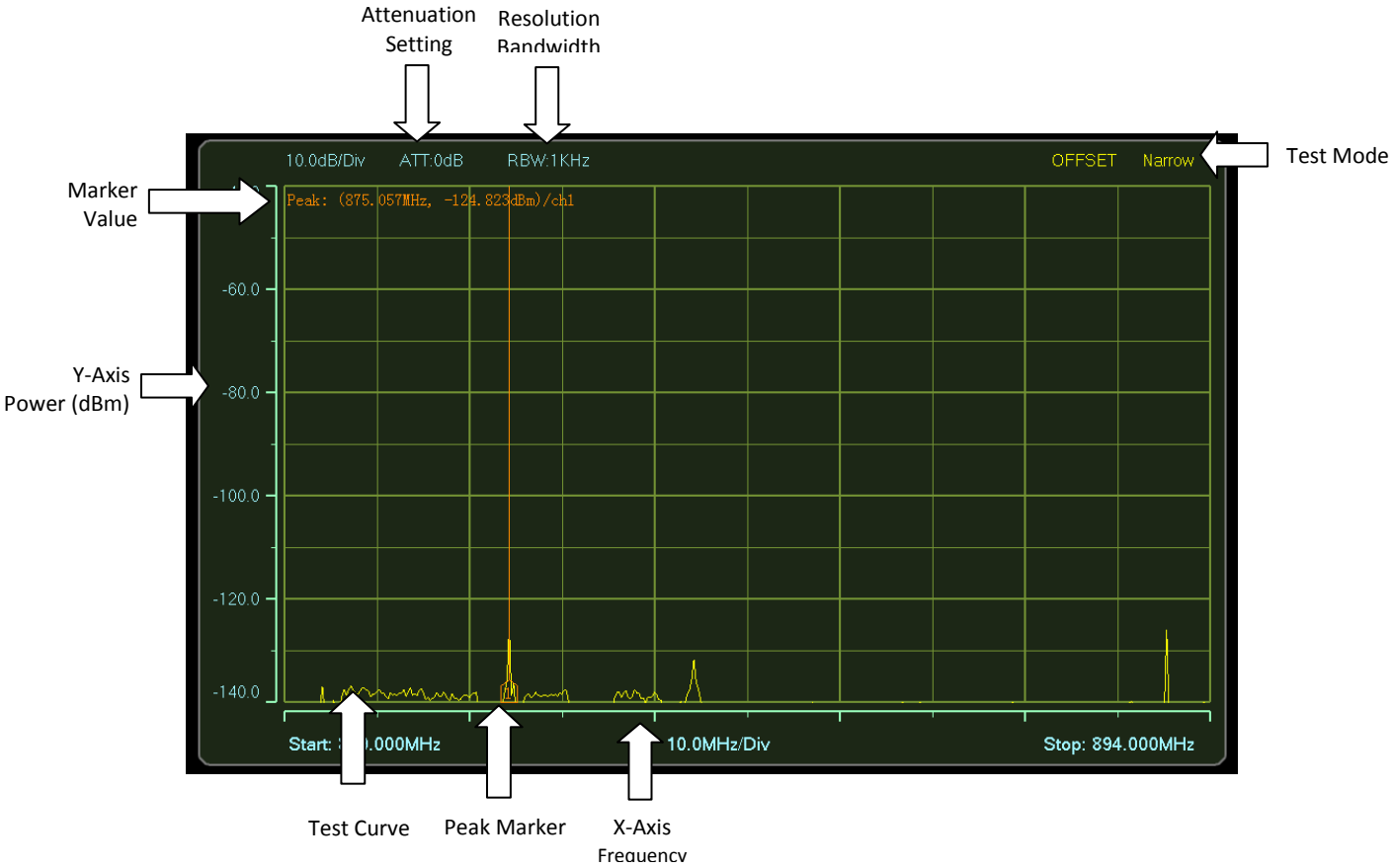


Figure 5-2 Spectrum Test Curve Section

- ✧ Test Curve: Yellow curve shows the spectrum of the receive signal
- ✧ RBW: Show the setting resolution bandwidth
- ✧ ATT: Show the setting attenuation level
- ✧ Marker: Customized Marker marked in the measured curve
- ✧ Marker Value: Show the frequency and power level of the Marker
- ✧ X-Axis: Frequency
- ✧ Y-Axis: Power level of the receive signal in dBm
- ✧ Test Mode: Show the test mode under test, Narrow or Wide
  - Narrow is narrow band, which is the receive band shown in **Table 4-1.**
  - Wide is broadband, which is from 100MHz to 3GHz

5.1.3 Command Bar

Spectrum Analyzer Command Bar is for spectrum parameter setup, measure and test result saving or reading.

- Press “NEXT” button to show the next page of Command Bar.

- Press “BACK” button in the extended Command Bar to move back to former page of Command Bar.

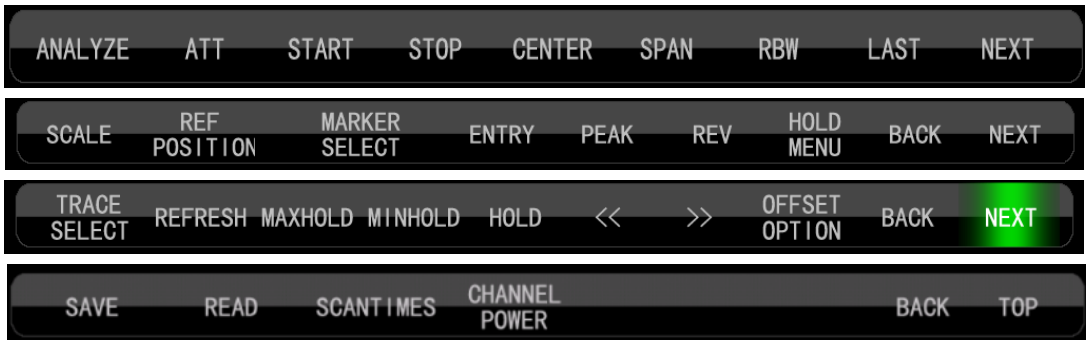

ANALYZE ATT START STOP CENTER SPAN RBW LAST NEXT
SCALE REF POSITION MARKER SELECT ENTRY PEAK REV HOLD MENU BACK NEXT
TRACE SELECT REFRESH MAXHOLD MINHOLD HOLD << >> OFFSET OPTION BACK NEXT
SAVE READ SCANTIMES CHANNEL POWER BACK TOP

Figure 5-3 Spectrum Command Bar

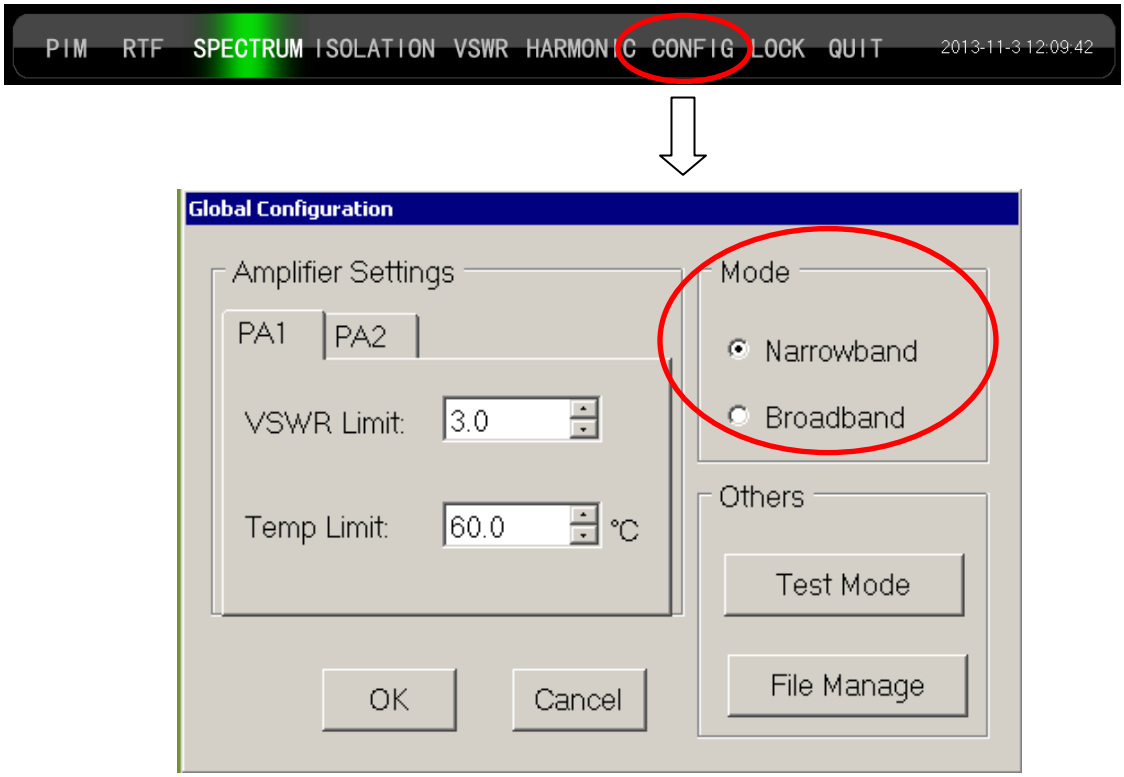
- ANALYZE: Start or Stop Spectrum Measurement
- ATT: Setup for Internal Attenuation
- START: Start frequency
- STOP: Stop frequency
- CENTER: Center frequency
- SPAN: Frequency span setup
- RBW: Resolution bandwidth setup
- LAST: Move to last page of Command Bar
- NEXT: Move to next page of Command Bar
- SCALE: Setup the dB value per DIV for Y-Axis
- REF POSITION: Setup numbers of DIVs for X-Axis and Y-Axis
- MARKER SELECT: Enable Markers marking in Test Curve Section
- ENTRY: Setup the frequency of enabled Marker
- PEAK: Move (or create) the marker to peak power point
- REV: Setup value to compensate external attenuation (like cable loss, insert loss, etc.)
- HOLD MENU: Enable Maximum Hold or Minimum Hold for Test Curve
- BACK: Back to former page of Command Bar
- TRACE SELECT: Enable the trace to record the test result for further comparison purpose
- REFRESH: Refresh trace
- MAXHOLD: Hold the maximum value for current trace
- MINHOLD: Hold the minimum value for current trace
- HOLD: Show the measurement result and trace simultaneously
- <<: Quickly shift Center Frequency 20% to the lower frequency side
- >>: Quickly shift Center Frequency 20% to higher frequency side

- ✧ OFFSET OPTION: Select Offset curve file to compensate the insertion loss or gain of the Device or System Under test (as described in **Chapter** 5.2.13)
- ✧ SAVE: Save the test result
- ✧ READ: Read the saved test result
- ✧ SCANTIMES: Set up times for scanning the defined spectrum
- ✧ CHANNEL POWER: Channel Power Measurement
- ✧ TOP: Back to the first page of Command Bar

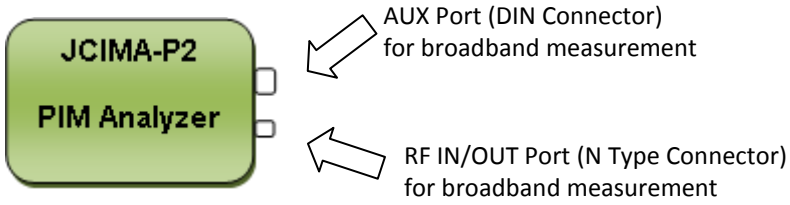
5.2 Setup for Spectrum Measurement

5.2.1 Test mode setup

Press the **"CONFIG"** softkey in Function Option Section, the Configuration window will pop up as shown in below. In "**Mode**" area, select "**Narrowband**" or "**Broadband**" and then press "**OK**".



- ✧ Broadband: for measurement via AUX port (N-type Connector) only.
  - The frequency range for broadband is from 100MHz to 3GHz.
- ✧ Narrowband: for measurement via RF IN/OUT port (DIN Connector) only.
  - The frequency range is different from JCIMA-P2 model.
  - **Table 5-1 shows the detail frequency ranges for different JCIMA-P2 models.**



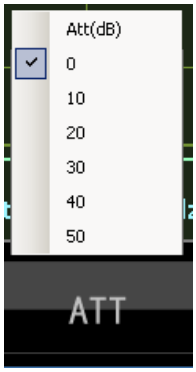
Caution: The maximum input power on for both AUX and RF IN/OUT ports must be less than -10dBm!

Model Number	Narrowband Frequency Range (MHz)
JCIMA-700-P2	698 - 716 779.5 - 804.5
JCIMA-850-P2	824 - 849
JCIMA-900-P2	885 - 915
JCIMA-1800-P2	1710 - 1785
JCIMA-1900-P2	1850 - 1910
JCIMA-1921-P2	1710 - 1910
JCIMA-2000-P2	1920 - 2060
JCIMA-2600-P2	2500 - 2570

Table 5-1 Frequency Ranges for Narrowband Mode

5.2.2 Reference Level Setup

Press the "**REF LEVEL"** softkey in Command Bar to configure value for the internal attenuator (ATT). The valid range is 0 - 50dBm in 10 dB step.



The default reference level is dBm with 40dB internal attenuator, which means the dynamic range shows in Y-Axis is -140dBm to -40dBm.

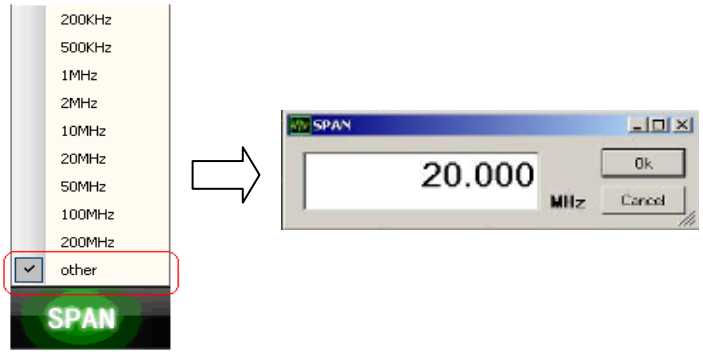
5.2.3 Frequency Setup

✧ Press the "**START**" softkey in the Command Bar, input the start frequency and then press "**OK**" button to complete the setup.

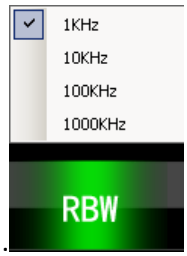
✧ Press the "**STOP**" softkey in the Command Bar, input the stop frequency and then press "**OK**" button to complete the setup.

✧ Press the "**Center**" softkey in the Command Bar, input the center frequency and then press "**OK**" button to complete the setup.

✧ Press the "**SPAN**" softkey in the Command Bar, choose the frequency span or press "**Other**" button to setup the customized span in the pop-up span window. Press "**OK**" button to complete the setup and quit the span window.

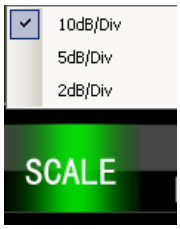


✧ Press the "**RBW**" softkey in the Command Bar and choose the resolution bandwidth.



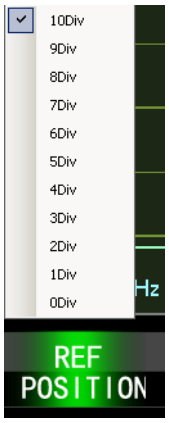
5.2.4 Setup for SCALE

Press the "**SCALE**" softkey in the Command Bar and choose dB value per DIV for Y-Axis.



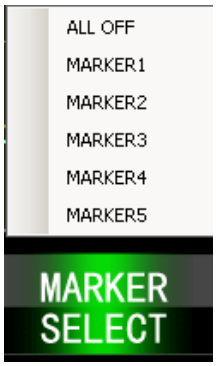
5.2.5 Reference Position Setup

Press the "**REF POSITION**" softkey in the Command Bar and choose DIV numbers for both X-Axis and Y-Axis.



5.2.6 Enable Markers

Press the "**MARKER SELECT**" softkey in the Command Bar to select markers on or off.



5.2.7 Setup Frequency for Markers

Press the "**ENTRY**" softkey in the Command Bar and set the frequency of the marker.

5.2.8 Move the marker to Peak Power

Press the "**Peak**" button in the Command Bar to move the marker to peak power point.

5.2.9 Setup for External Attenuation Compensation

Press the "**REV**" softkey in the Command Bar and then input the external attenuation or insertion loss of the Device or System Under Test for compensation.

5.2.10 Hold MENU

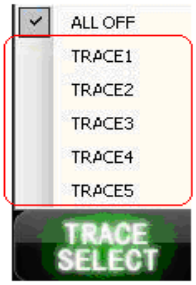
Press the "**HOLD MENU**" softkey in the Command Bar to select Maximum Hold or Minimum hold for Selected Markers.

5.2.11 The Trace Function

The trace function is used to retain and display the measurement result for a given point in time. It is convenient for making a comparison with the current measurement data. The spectrum analyzer provides the **REFRESH, MAXHOLD, MINHOLD**, and **HOLD** commands, which can be selected while a trace is being displayed.

✧ Activate the trace function

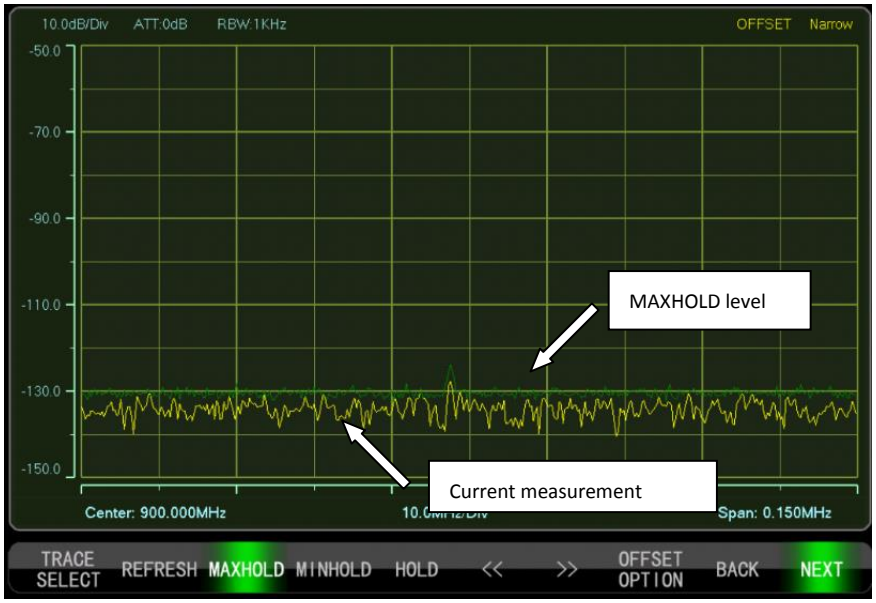
- Press the "**TRACE SELECT**" softkey in Command Bar to select to enable or disable the trace.
- Press the trace number user wants to enable.



✧ To refresh a trace, press the "**REFRESH**" button.

✧ Display the current measurement and MAXHOLD level of the measurement.

- The "**MAXHOLD**" softkey updates the maximum measured level. This allows you to make a comparison between the maximum and the current levels.

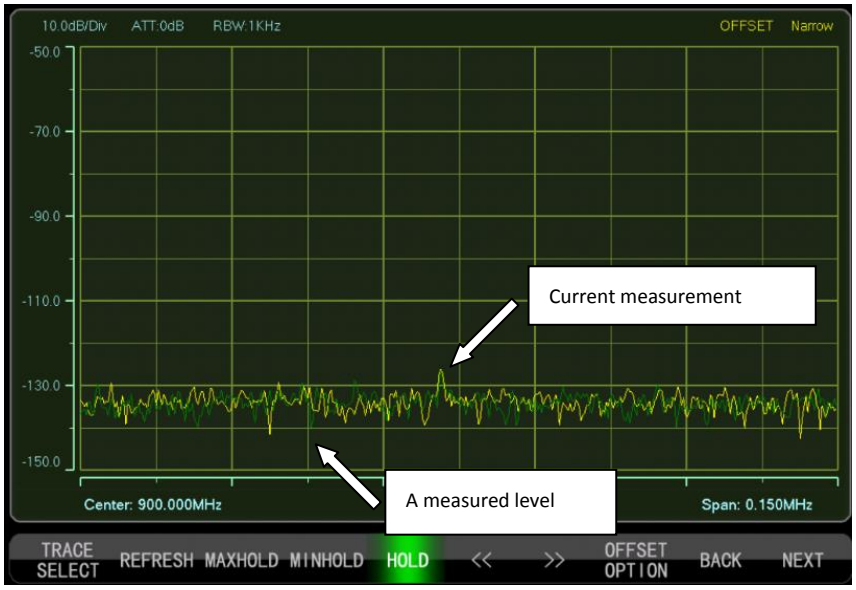


✧ Display the current measurement and **MINHOLD** level of the measurement.

- The "**MINHOLD**" softkey retains the minimum measured level. This allows you to make a comparison between the minimum and the current levels.

✧ Display the current measurement and the measured level for a given point in time.

- The "**HOLD**" softkey is used for evaluating fluctuations in the measured levels.



✧ Clear a trace: press the "**REFRESH**" softkey to clear an active trace.

✧ Turn off trace

To turn off trace, use either of the following methods:

- Press the "**TRACE SELECT**" softkey and then, in the displayed list, press the trace number you want to disable.
- Press the "**MAXHOLD**", "**MINHOLD**", or "**HOLD**" softkey which is currently turned on, to turn it off.
- Press the "**TRACE SELECT**" softkey and then press the "**ALL OFF**" button. All the displayed traces will be turned off.

5.2.12 Quick Span Shift Command

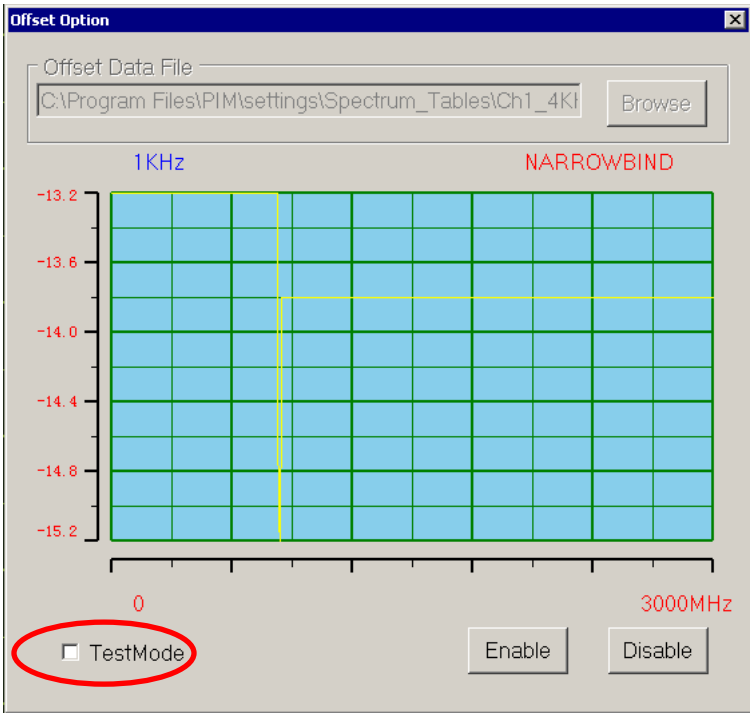
Press the "**<<**" softkey in the Command Bar to quickly shift 20% of Center Frequency to lower side.

Press the "**>>**" softkey in the Command Bar to quickly shift 20% of Center Frequency to higher side.

5.2.13 Load Offset File for Compensation

JCIMA-P2 Spectrum Analyzer function allows user to import an offset curve file, which has the attenuation value by frequency information of the device or system under test, for the compensation of the spectrum measurement.

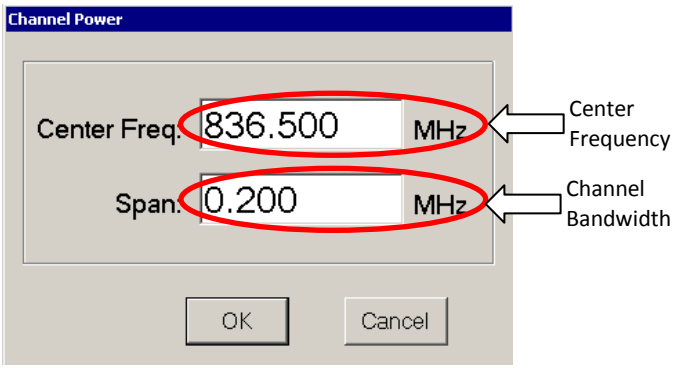
- Press the "**OFFSET OPTION**" softkey in the Command Bar,
- Enable the "**TestMode**" in Offset Option Window,
- Choose the offset file then press "**ENABLE"** button**.**



5.2.14 Channel Power Measurement

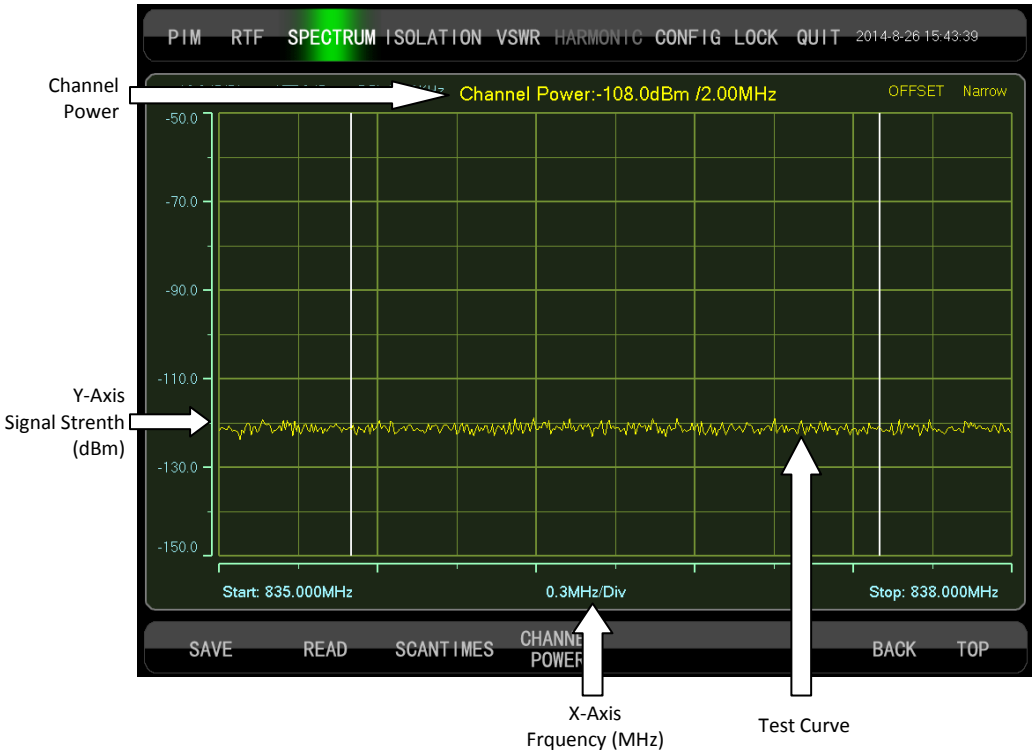
JCIMA-P2 Spectrum Analyzer function allows user to measurew channel power of RF signal.

- Press the "**CHANNEL POWER**" softkey in the Command Bar as shown in **Figure 5-3.** The Channel Power setup window will popup



- Input the Center Frequency and Channel Bandwidth and then click "**OK**" button

The Channel Power Measurement will be shown in figure as below:



5.2.15 Spectrum Measurement

5.2.16 Preparation of the Measurement

- Connect the PIM Analyzer to System Under Test via test cable as shown in **Figure 5-4**.

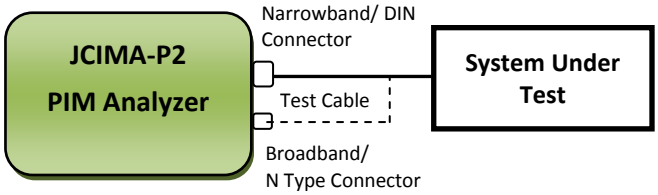


Figure 5-4 Setup for Spectrum Measurement

Connect to DIN Connector when user wants to implement narrow band scan.

Connect to N Type Connector when user wants to implement broad band scan.

Caution: The maximum input power on for both AUX and RF IN/OUT ports must be less than -10dBm!

Please use the torque wrench to ensure the accuracy of measurement results.

Recommended torque: 5N-M for N type connector, 17.5-22N-M for 7/16 type connector.

- When using remote control terminal, please confirm only WiFi LED in PIM Analyzer front panel is on (Red) and the LED screen shows "***1111***".

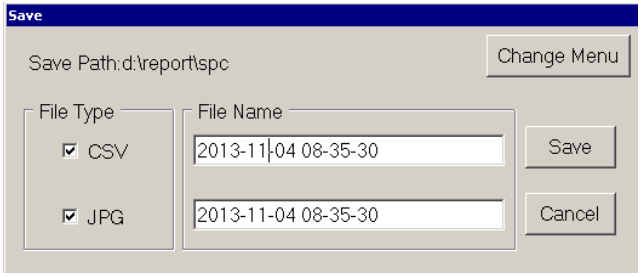
5.2.17 Start and Stop the Spectrum Measurement

- ✧ In JCIMA-P2 test interface, press the "**SPECTRUM**" softkey in Functional Option Section.
- ✧ Press the "**ANALYZE**" button in Command Bar to start the spectrum measurement. The "**ANALYZE**" button will turn to green when running test.
- ✧ Press the "**ANALYZE**" button in Command Bar again to stop the spectrum measurement. The "**ANALYZE**" button will return to normal when spectrum measurement stops.

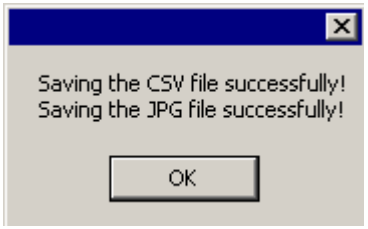
5.2.18 Save and Read the Test Result

5.3.3.1 Save the Spectrum Measurement

- Press the "**SAVE**" softkey in Command Bar.
- The save setup window will pop up.

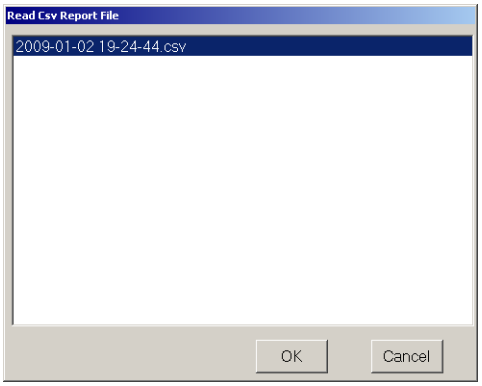


- Choose the file format – can be multiple logs with different formats.
- Specify the file name then press "**OK**" button to execute "Save" command.
  - The test result will be saved under D:\Report\spc with date and time automatically (when using default name).
- After the test result is saved successfully, the follow window will pop up. Press "**OK**" button to quit the window.



5.3.3.2 Read Saved Test Result

- Press the "**READ**" softkey in the Command Bar.
- The "Read CSV Report File" window will pop up.



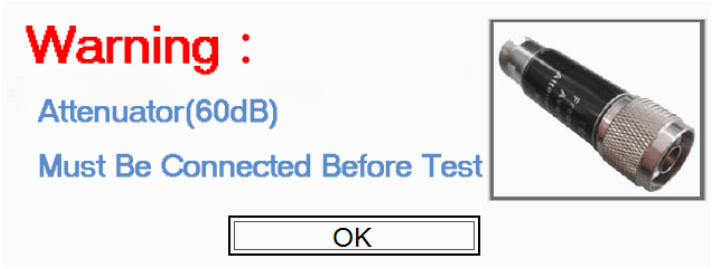
- Select the file and press "**OK**" button to read the saved test result.

6. Isolation/ Insertion Loss Measurement Function

When pressing "**ISOLATION**" softkey in Function Option Section, the Isolation Measurement function will be selected and the test interface will move to Isolation operation interface.

The isolation measurement function can be used to measure the isolation or insertion loss between ports of Device/System under Test.

When pressing the "**ISOLATION**" softkey, a warning notice will appear as below. The protection attenuators (2 x 30dB fixed attenuators provided by manufacturer) are required to connect the AUX port (N-type Connector) to confirm the input power less than -10dBm.



6.1 Operating Interface

Figure 6-1 shows the operation interface of Isolation Measurement Function.

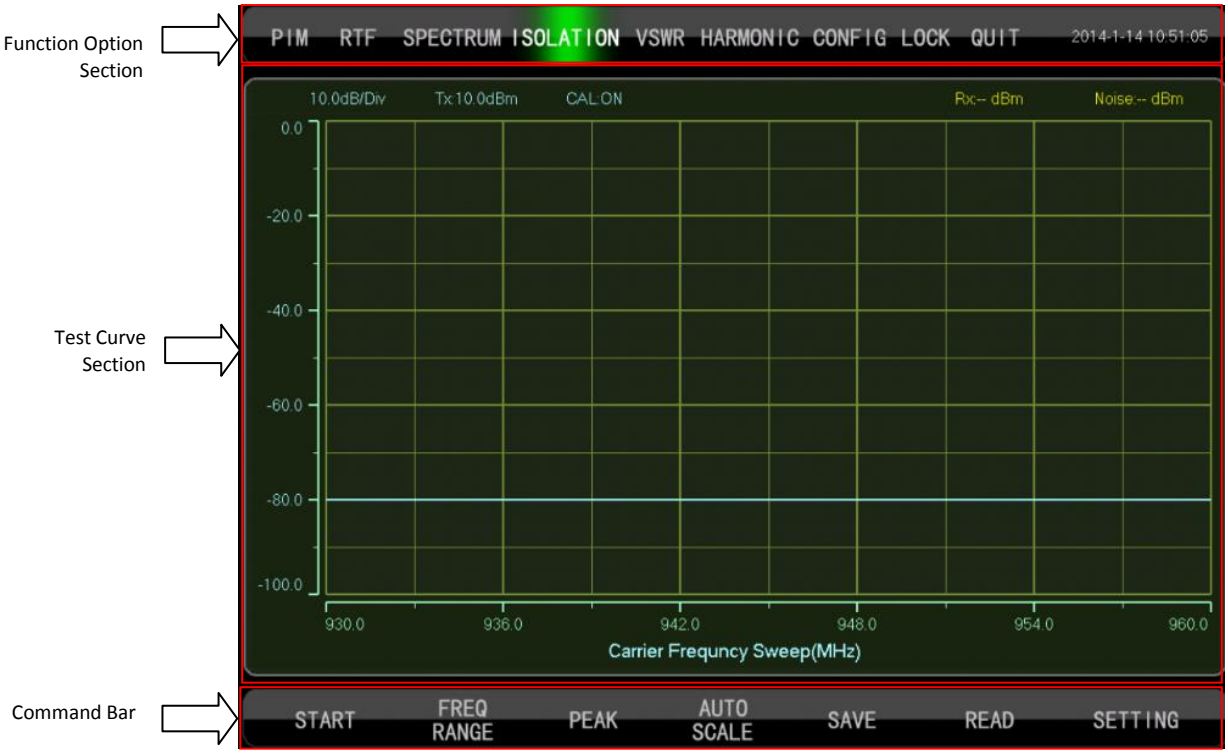


Figure 6-1 Operation Interface of Isolation Measurement Function

6.1.1 Function Option Section

Please refer **Chapter** 3.1.1 for Function Option Section.

6.1.2 Test Curve Section

As shown in **Figure 6-2**, the Test Curve Section shows the Isolation/ Insertion Loss measurement result.

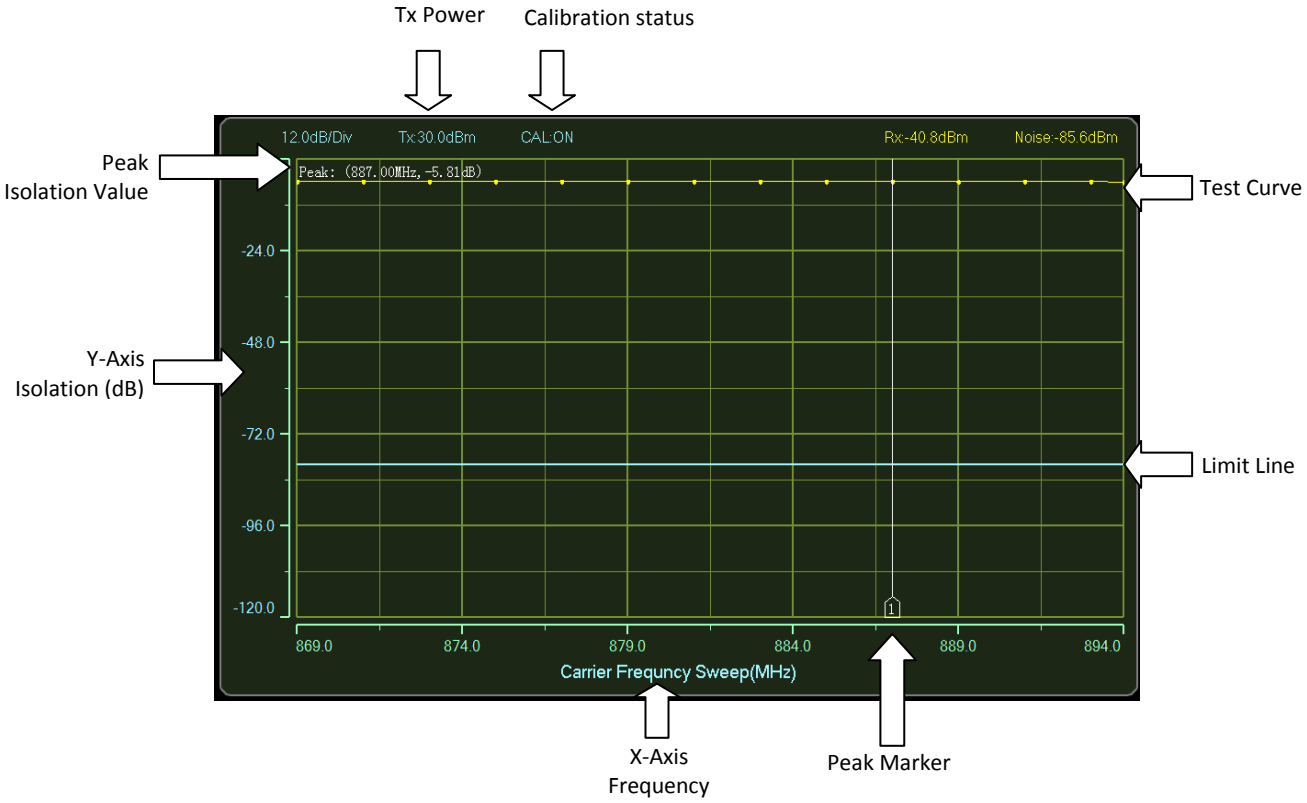


Figure 6-2 Isolation Test Curve Section

- ✧ Test Curve: Yellow curve shows the Isolation/ Insertion Loss measurement result
- ✧ Peak Marker: Show the peak point in the curve
- ✧ Peak Isolation Value: Show the frequency and isolation/ insertion loss value of peak point
- ✧ X-Axis: Frequency
- ✧ Y-Axis: Isolation Level in dB
- ✧ TX Power: Transmission power of the Power Amplifier
- ✧ Limit Line: Line of limit which user uses to evaluate test result

6.1.3 Command Bar

Press the softkeys in Command Bar for Isolation/ Insertion Loss test setup and measurement.

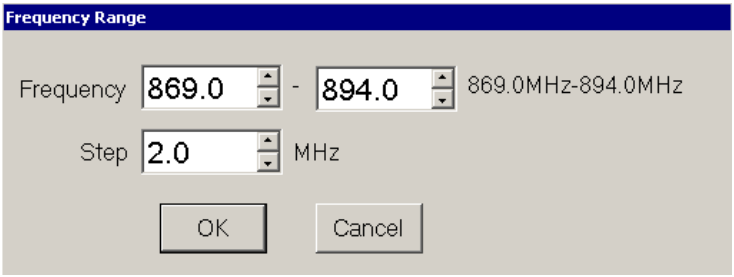
- ✧ START: Start and Stop the Isolation/ Insertion Loss measurement
- ✧ FREQ RANGE: Frequency range setup for Isolation/ Insertion measurement
- ✧ PEAK: Mark the Peak test point from the measurement result
- ✧ AUTO SCALE: Y-axis Auto-regulation
- ✧ SAVE: Save test result
- ✧ READ: Read saved test result
- ✧ Setting: Open the setup window

6.2 Setup for Isolation/ Insertion Loss Measurement

6.2.1 Frequency Range Setup

The frequency range option will allow user to setup the sweep frequency range and step for isolation/ insertion loss measurement.

- Press the "**FREQ RANGE**" softkey in the Command Bar.
- Input the frequency range and step in the pop up window.
- Press "**OK**" button to complete the set up and close the pop up window.



The valid frequency range for Isolation/ Insertion Loss measurement is different based on the JCIMA-P2 models.

Table 6-1 shows the detail frequency range for different JCIMA-P2 PIM Analyzers.

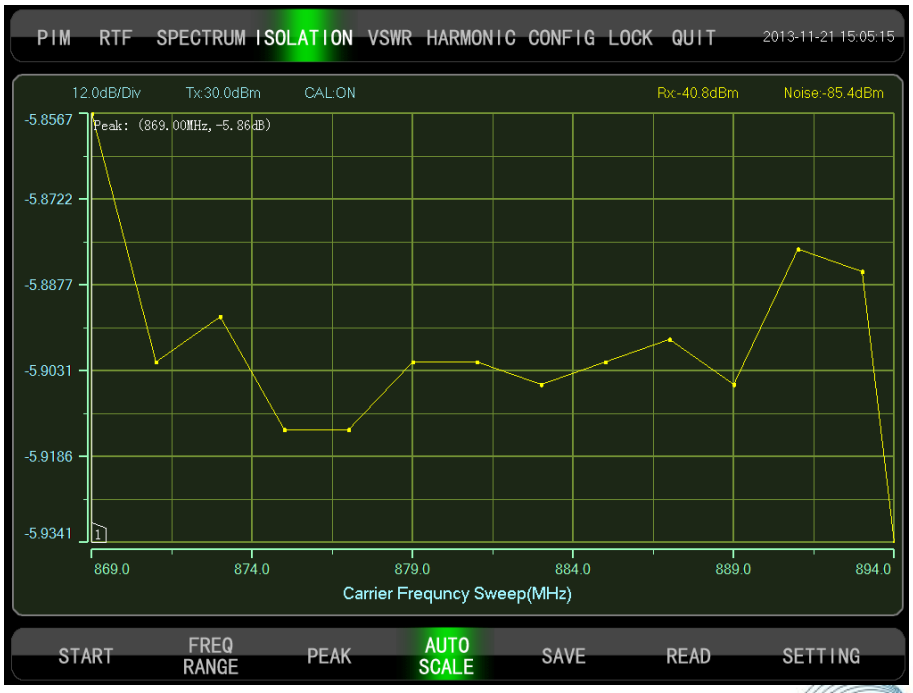
Model Number	Valid Frequency Range (MHz)
JCIMA-700-P2	732– 764
JCIMA-850-P2	869 – 894
JCIMA-900-P2	930 – 960
JCIMA-1800-P2	1805 – 1880
JCIMA-1900-P2	1930 - 1990
JCIMA-1921-P2	1930-1990 and 2110-2155
JCIMA-2000-P2	2110 – 2170
JCIMA-2600-P2	2620 – 2690

Table 6-1 Valid Frequency Range for Isolation/ Insertion Loss Measurement

6.2.2 Y-Axis Auto-Regulation

Press the "**AUTO SCALE**" softkey in Command Bar, the curve display window will regulate itself automatically through adjusting the start and end value of Y-Axis for better displaying.

The value of Y-Axis will start from the minimum current measured result and end at the maximum result.



6.2.3 Isolation/ Insertion Loss Setting Window

The Setting window is for calibration and parameter setup for Isolation and Insertion Loss measurement. Press “SETTING” softkey in Command Bar, the setting window will pop up as shown in **Figure 6-3**.

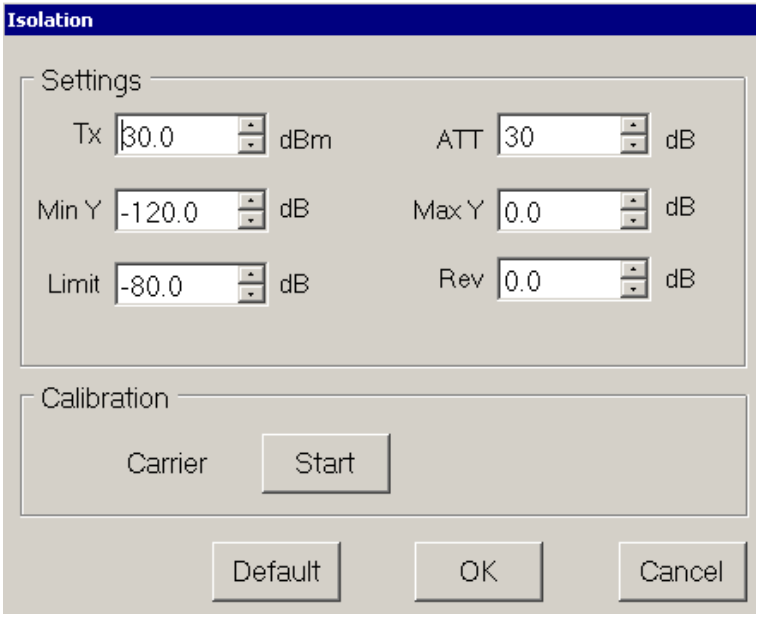


Figure 6-3 Setting Window for Isolation/ Insertion Loss Feature

- ✧ Tx (dBm): RF Transmission Power for the measurement (10-30dBm)
- ✧ ATT: Internal attenuation for receive spectrum analyzer (0-40dB)
- ✧ Min Y: The start dB value of the Y-Axis
- ✧ Max Y: The stop of the Y-axis
- ✧ Limit(dB): Limit line setup for the test
- ✧ Rev: Setup compensation value (dB) for extra insertion loss (e.g. Cable loss, etc.)
- ✧ Calibration: For Calibration before measurement
- ✧ Default: Set all parameters back to manufacture setting

6.3 Isolation/Insertion Loss Measurement

6.3.1 Calibration before Measurement

- Connect the PIM Analyzer for calibration setup as shown in **Figure 6-4**.

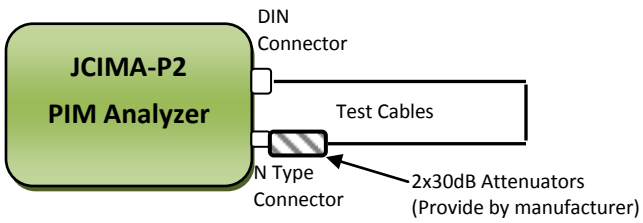


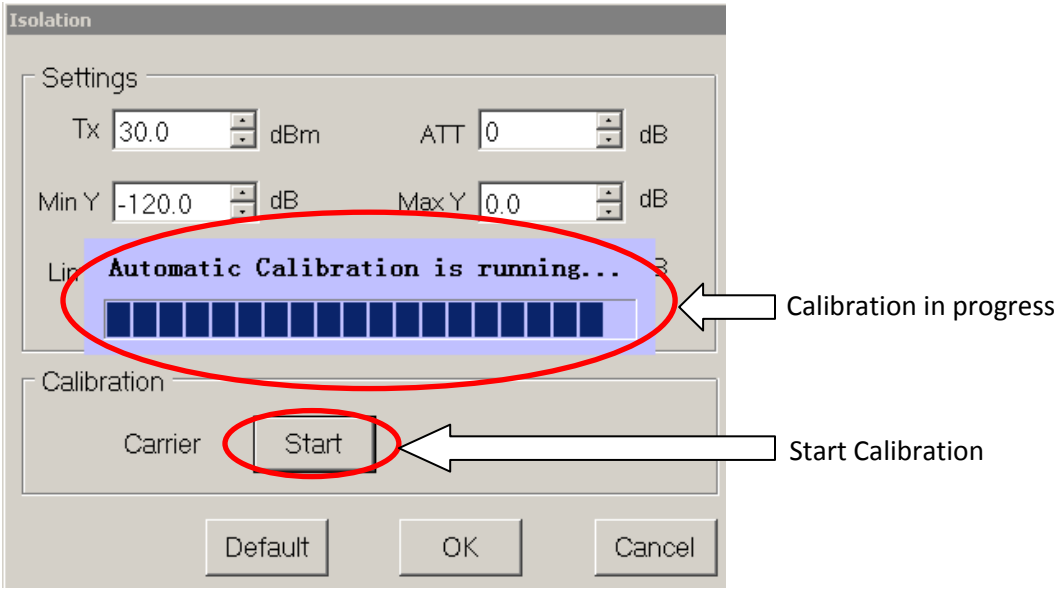
Figure 6-4 Setup for Isolation/ Insertion Loss Calibration

Please use the torque wrench to ensure the accuracy of measurement results.

Recommended torque: 5N-M for N type connector, 17.5-22N-M for 7/16 type connector.

- Press “ISOLATION” softkey in Function Option Section to access the Isolation/ Insertion Loss operation interface.
- When using remote control terminal, please confirm the WiFi and ISO LEDs in PIM Analyzer front panel are on (Red).

- Confirm the broadband connector (N Type Connector) of JCIMA-P2 is protected by 60dB attenuation (2 x 30dB Attenuators) and press “**OK**” button to close the warning window.
- Press “**SETTING**” softkey in Command Bar.
- Leave all options as default in the Setting Window.
- Press “**Start**” button to start calibration.
- Press “**OK**” button to close the Setting window.



6.3.2 Start and Stop the Isolation/ Insertion Loss Measurement

6.3.2.1 Test Setup

Figure 6-5 and **Figure 6-6** show the test setup for Isolation and Insertion Loss measurement respectively.

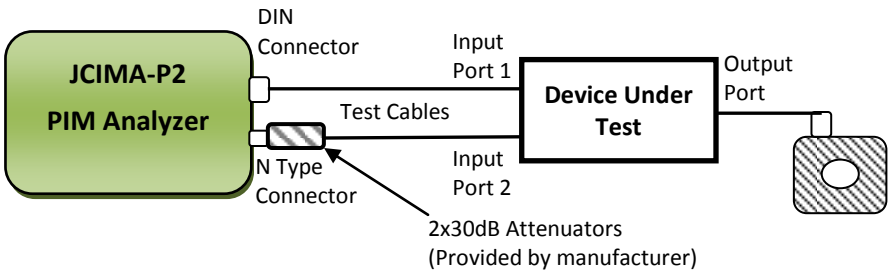


Figure 6-5 Setup for Isolation Measurement

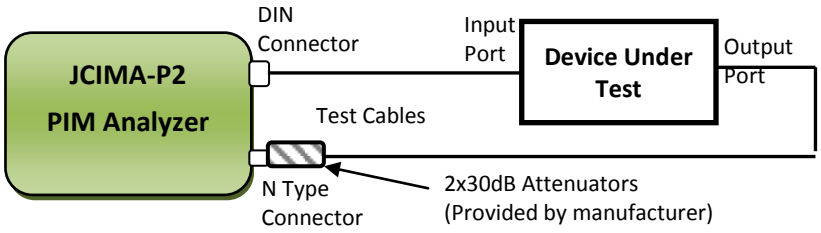


Figure 6-6 Setup for Insertion Loss Measurement

6.3.2.2 Start and Stop the measurement

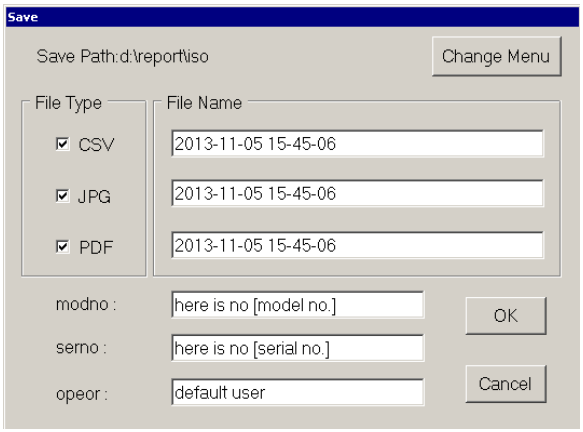
- Press "**START**" button in the Command Bar to start the Isolation or Insertion Loss measurement.
  - When measurement starts, both "**START**" and "**PEAK**" buttons will turn to green.
  - After measurement completes, the "**START**" and "**PEAK**" buttons will turn back to normal.
- Wait until measurement complete or press "**START**" button again to stop the measurement.

While the remote display reports the Isolation/ Insertion Loss measurement result, the Peak Isolation/ Insertion Loss result is also displayed in the LED screen of PIM Analyzer front panel.

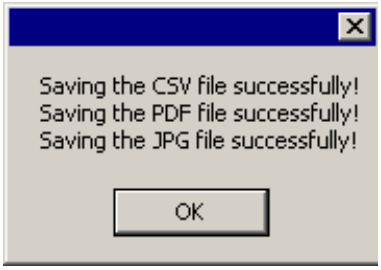
6.3.3 Save and Read the Test Result

6.3.3.1 Save the Test Result

- Press the "**SAVE**" softkey in Command Bar.
- The save setup window will pop up.

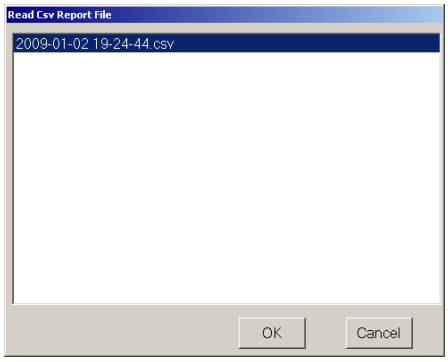


- Choose the file format – can be multiple logs with different formats.
- Specify the file name, model number ("**modno**"), serial number ("**serno**") and the tester's name ("**opeor**").
- Press "**OK**" button to execute "Save" command.
  - The test result will be saved under D:\Report\iso with date and time automatically (when using default name).
- After the test result is saved successfully, the follow window will pop up. Press "**OK**" button to quit the window.



6.3.3.2 Read Saved Test Result

- Press the "**READ**" softkey in the Command Bar.
- The "Read CSV Report File" window will pop up.



- Select the file and press "**OK**" button to read the saved test result.

7. VSWR/Return Loss Measurement

JCIMA-P2 provide the VSWR/ Return measurement function which helps the user to evaluate or troubleshooting the VSWR/ Return Loss issues either in the field or lab.

7.1 Operating Interface

Press the "**VSWR**" softkey in Function Option Section. The VSWR/ Return Loss Measurement function will be selected and the JCIMA-P2 will move to VSWR interface as shown in **Figure 7-1**.

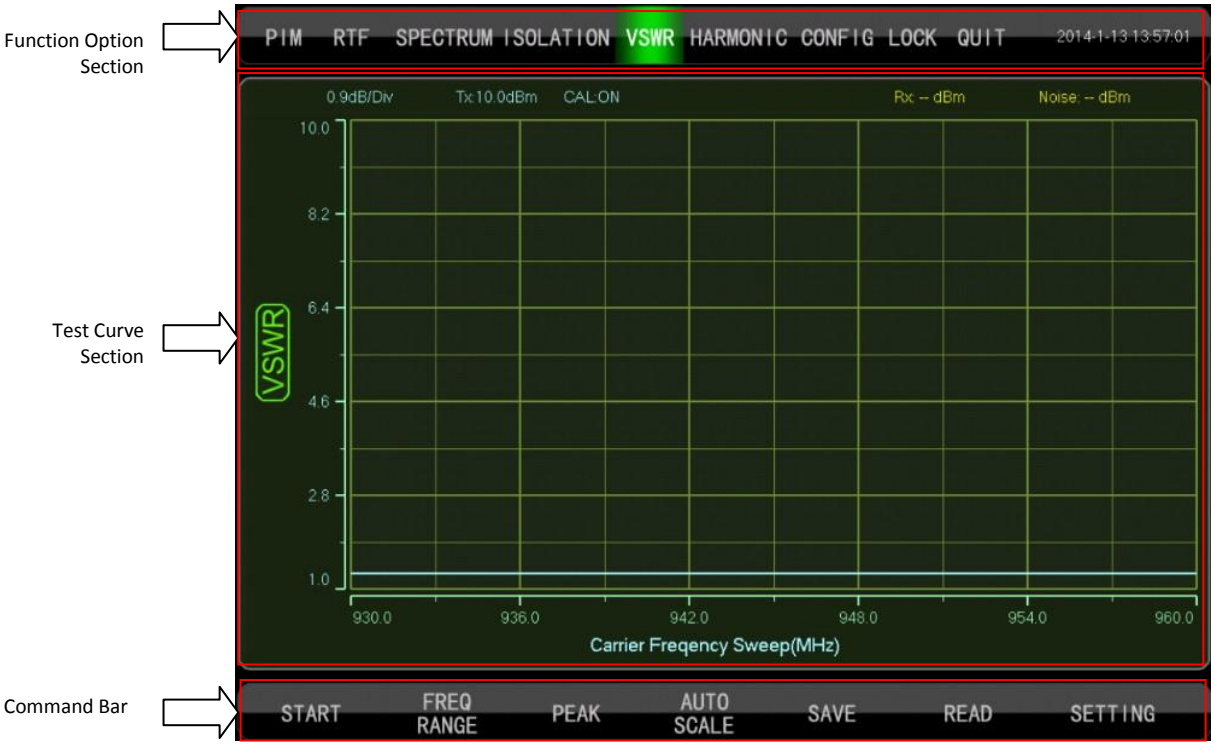


Figure 7-1 Operation Interface of VSWR/ Return Loss Measurement Function

7.1.1 Function Option Section

Please refer **Chapter** 3.1.1 for Function Option Section.

7.1.2 Test Curve Section

As shown in **Figure 7-2**, the Test Curve Section shows the VSWR/ Return Loss measurement result.

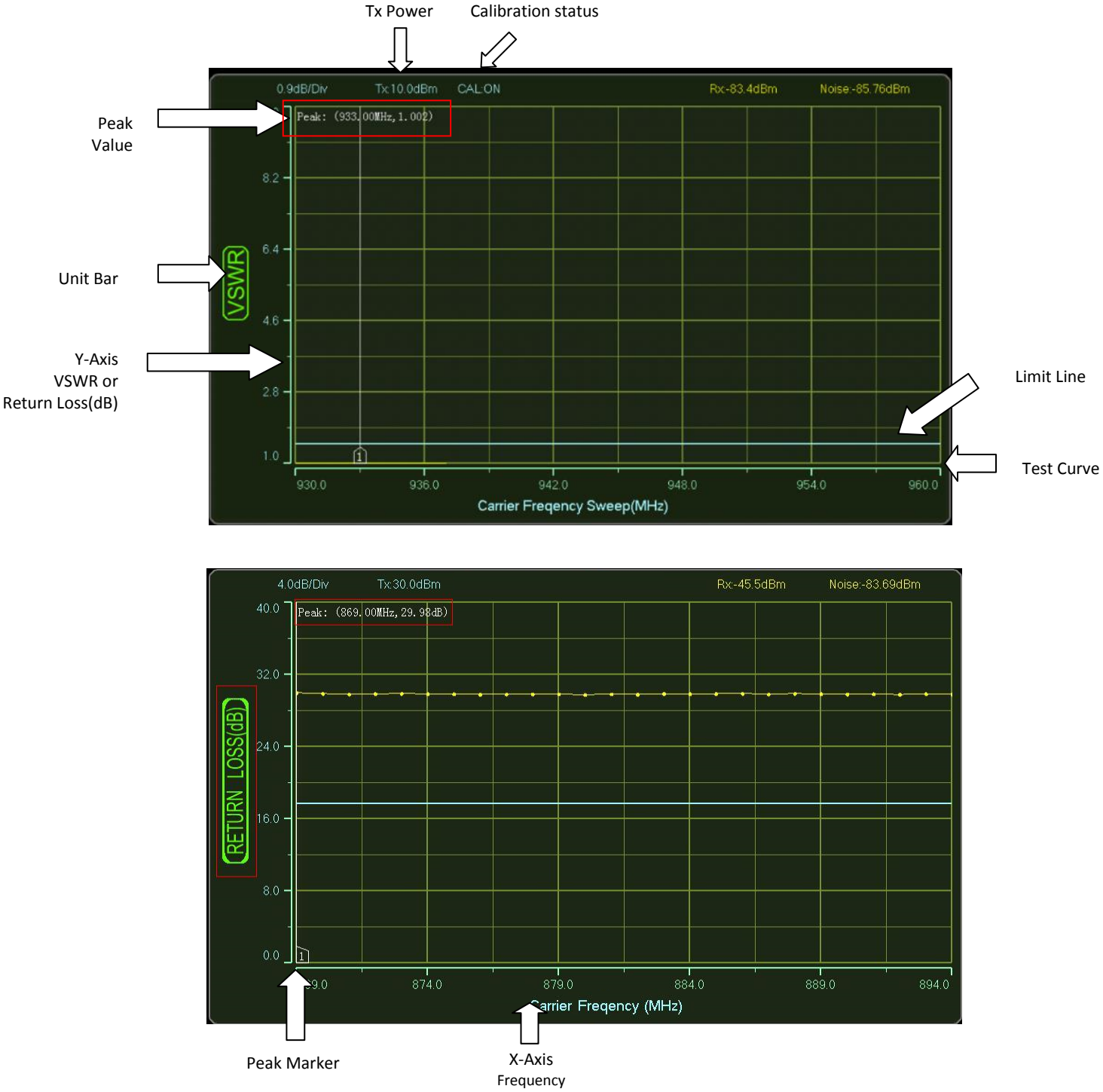


Figure 7-2 VSWR/ Return Loss Test Curve Section

- ✧ Test Curve: Yellow curve shows the VSWR/Return Loss measurement result
- ✧ Peak Marker: Show the peak point in the curve
- ✧ Peak Value: Show the frequency and VSWR (or Return Loss) value of peak point
- ✧ Unit Bar: Press to switch between Return Loss and VSWR
- ✧ X-Axis: Frequency
- ✧ Y-Axis: Return Loss Level in dB or VSWR level
- ✧ TX Power: Transmission power of the Power Amplifier
- ✧ Limit Line: Line of limit which user uses to evaluate test result

7.1.3 Command Bar

Press the softkeys in Command Bar for VSWR/ Return Loss test setup and measurement.

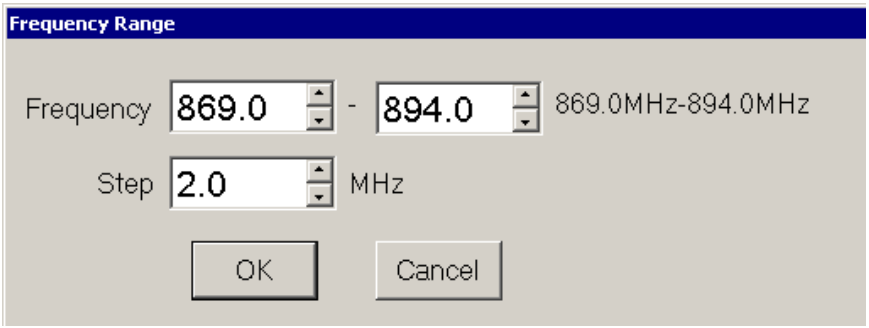
- ✧ START: Start and Stop the VSWR/ Return Loss measurement
- ✧ FREQ RANGE: Frequency range setup for VSWR/ Return Loss measurement
- ✧ PEAK: Mark the Peak test point from the measurement result
- ✧ AUTO SCALE: Y-axis Auto-regulation
- ✧ SAVE: Save test result
- ✧ READ: Read saved test result
- ✧ Setting: Open the setup window

7.2 Setup for VSWR/ Return Loss Measurement

7.2.1 Frequency Range Setup

The frequency range option will allow user to setup the sweep frequency range and step for VSWR/ Return Loss measurement.

- Press the "**FREQ RANGE**" softkey in the Command Bar.
- Input the frequency range and step in the pop up window.
- Press "**OK**" button to complete the set up and close the pop up window.



The valid frequency range for VSWR/ Return Loss measurement is different based on the JCIMA-P2 models. **Table 7-1** shows the detail frequency range for different JCIMA-P2 PIM Analyzers.

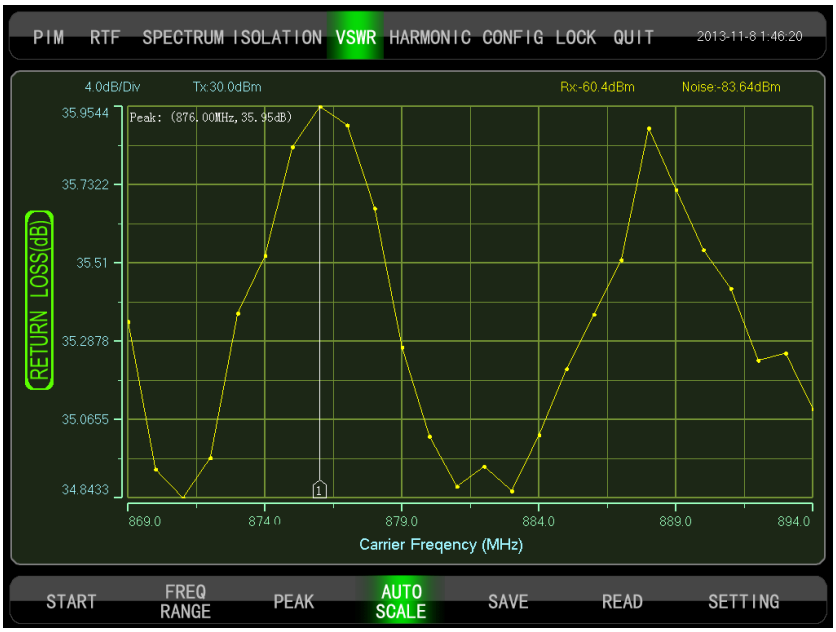
Model Number	Valid Frequency Range (MHz)
JCIMA-700-P2	732 – 764
JCIMA-850-P2	869 – 894
JCIMA-900-P2	930 – 960
JCIMA-1800-P2	1805 – 1880
JCIMA-1900-P2	1930 - 1990
JCIMA-1921-P2	1930-1990 and 2110-2155
JCIMA-2000-P2	2110 – 2170
JCIMA-2600-P2	2620 – 2690

Table 7-1 Valid Frequency Range for VSWR/ Return Loss Measurement

7.2.2 Y-Axis Auto-Regulation

Press the "**AUTO SCALE**" softkey in Command Bar, the curve display window will regulate itself automatically through adjusting the start and end value of Y-Axis for better displaying.

The value of Y-Axis will start from the minimum current measured result and end at the maximum result.



7.2.3 VSWR/ Return Loss Setting Window

The Setting window is for calibration and parameter setup for VSWR/ Return Loss measurement.

Press “SETTING” softkey in Command Bar, the setting window will pop up as shown in **Figure 7-3**.

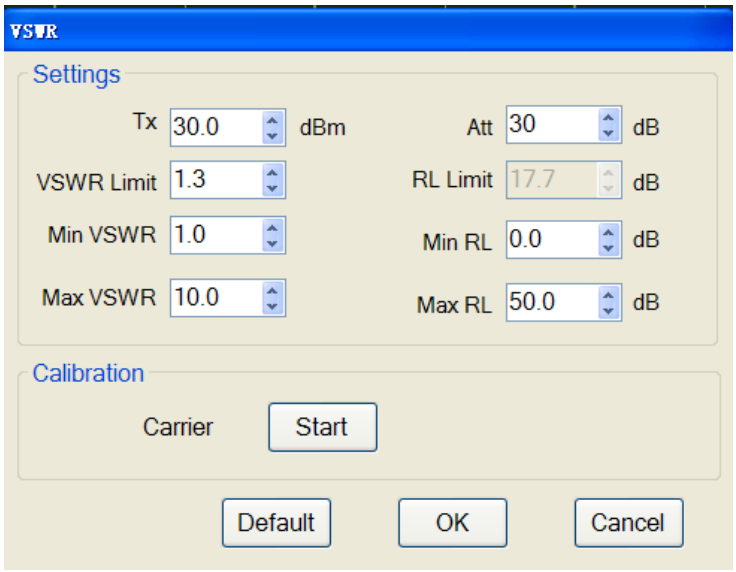
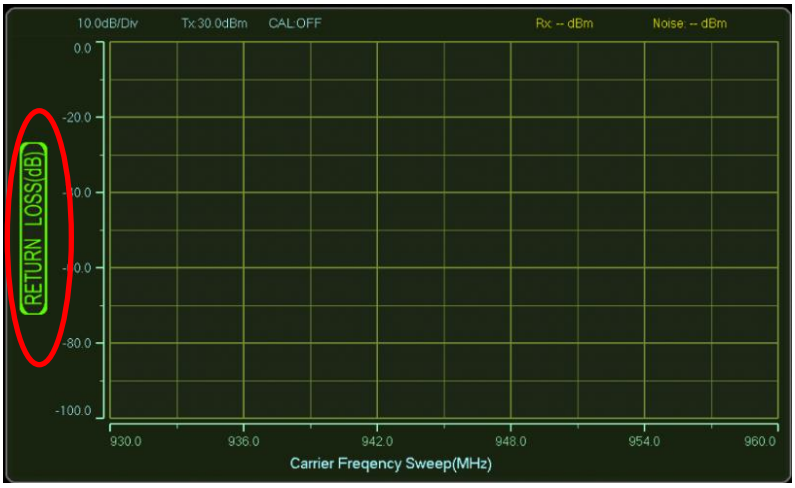


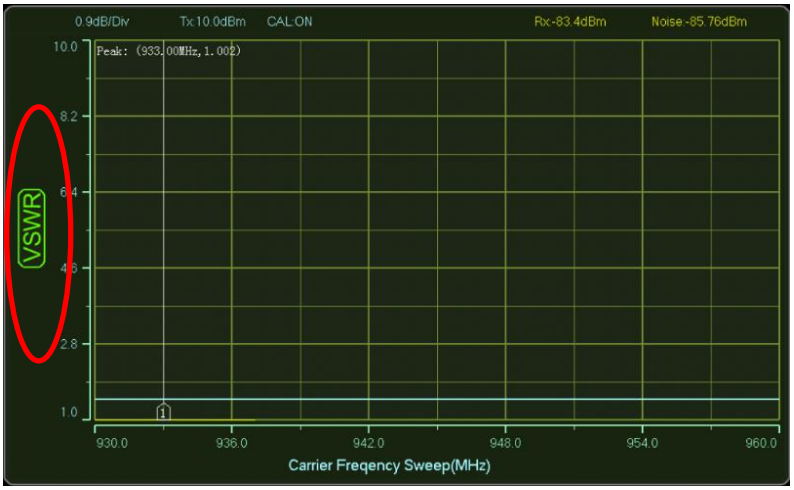
Figure 7-3 Setting Window for VSWR/ Return Loss Feature

- ✧ Tx (dBm): RF Transmission Power for the measurement (10-30dBm)
- ✧ ATT: Internal attenuation for receive spectrum analyzer (0-40dB)
- ✧ VSWR Limit: Limit line setup for the test
- ✧ Min VSWR: The start VSWR value of the Y-Axis
- ✧ Max VSWR: The stop VSWR value of the Y-axis
- ✧ Min RLS: The start Return Loss value (dB)of the Y-Axis
- ✧ Max RLS: The stop Return Loss value (dB) of the Y-axis
- ✧ Calibration: For Calibration before measurement
- ✧ Default: Set all parameters back to manufacture setting

7.2.4 Switch between Return Loss and VSWR

In Test Curve Section, when pressing **Unit Bar,** the Y-Axis display Unit can switch between Return Loss and VSWR. The default display is Return Loss in dB.





7.3 VSWR/ Return Loss Measurement

7.3.1 Calibration before Measurement

- Connect the PIM Analyzer for calibration setup as shown in **Figure 7-4.**

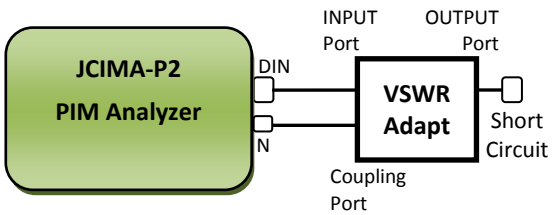


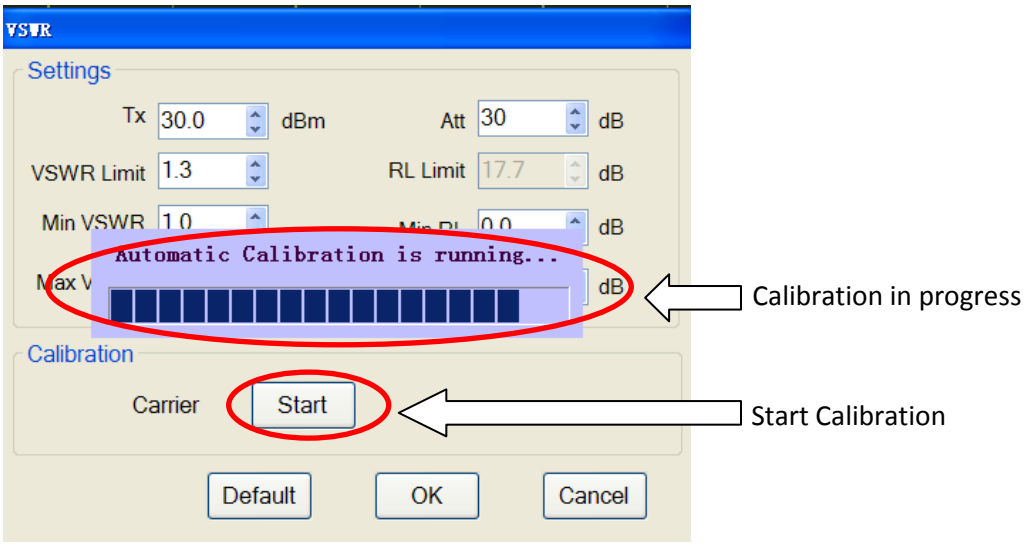
Figure 7-4 Setup for VSWR/ Return Loss Calibration

Please use the torque wrench to ensure the accuracy of measurement results.

Recommended torque: 5N-M for N type connector, 17.5-22N-M for 7/16 type connector.

- Press “VSWR” softkey in Function Option Section to access the VSWR/ Return Loss operation interface.
- When using remote control terminal, please confirm the WiFi and VSWR LEDs in PIM Analyzer front panel are on (Red).

- Press “**SETTING**” softkey in Command Bar.
- Leave all options as default in the Setting Window .
- Press “**Start**” button to start calibration.
- Press “**OK**” button to close the Setting window.



7.3.2 Start and Stop the VSWR/ Return Loss Measurement

7.3.2.1 Test Setup

Figure 7-5 show the test setup for VSWR /Return Loss measurement.

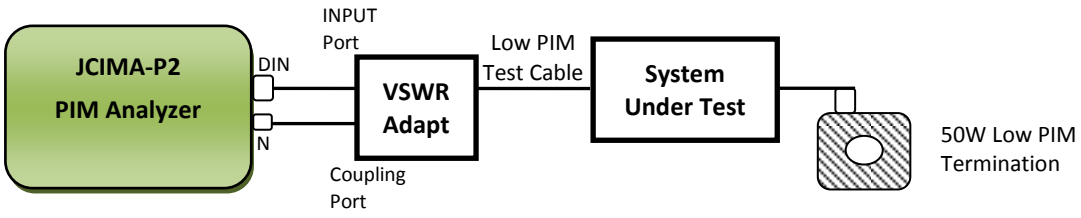


Figure 7-5 Setup for VSWR/ Return Loss Measurement

7.3.2.2 Start and Stop the measurement

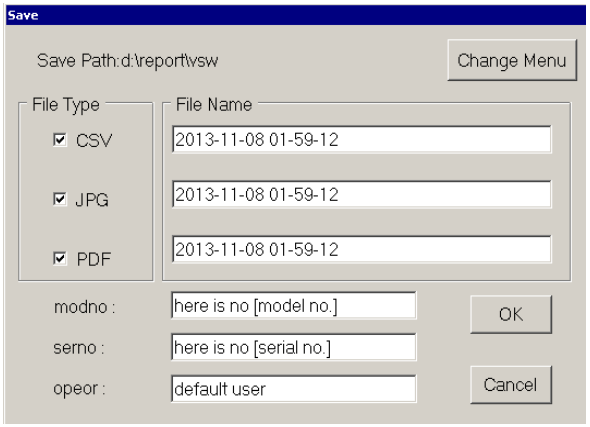
- Press "**START**" button in the Command Bar to start the VSWR/ Return Loss measurement.
  - When measurement starts, both "**START**" and "**PEAK**" buttons will turn to green.
  - After measurement completes, the "**START**" and "**PEAK**" buttons will turn back to normal.
- Wait until measurement complete or press "**START**" button again to stop the measurement.

While the remote display reports the VSWR/ Return Loss measurement result, the Peak VSWR/ Return Loss result is also displayed in the LED screen of PIM Analyzer front panel.

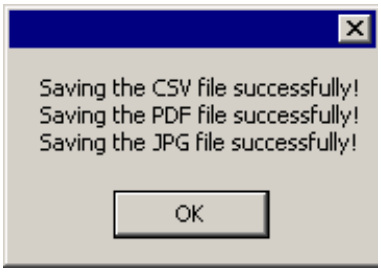
7.3.3 Save and Read the Test Result

7.3.3.1 Save the Test Result

- Press the "**SAVE**" softkey in Command Bar.
- The save setup window will pop up.

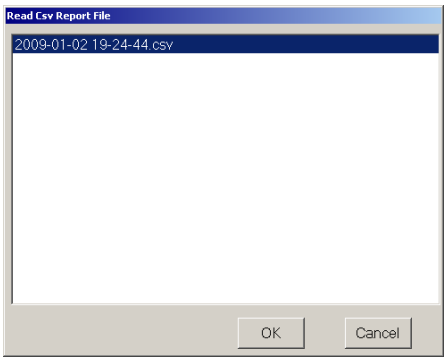


- Choose the file format – can be multiple logs with different formats.
- Specify the file name, model number ("**modno**"), serial number ("**serno**") and the tester's name ("**opeor**").
- Press "**OK**" button to execute "Save" command.
  - The test result will be saved under D:\Report\vsw with date and time automatically (when using default name).
- After the test result is saved successfully, the follow window will pop up. Press "**OK**" button to quit the window.



7.3.3.2 Read Saved Test Result

- Press the "**READ**" softkey in the Command Bar
- The "Read CSV Report File" window will pop up



- Select the file and press "**OK**" button to read the saved test result

8. 2nd Harmonic and 2nd Order PIM Measurement Function

JCIMA-P2 provides the 2nd Harmonic Measurement function for 850MHz band and 900MHz band, which will interfere the receive band of 1800MHz band and AWS band. This feature can be used to troubleshoot the interference issue caused by 2nd Harmonics and 2nd Order PIM.

8.1 Operating Interface

Press the "**HARMONIC**" softkey in Function Option Section. The 2nd Harmonic Measurement function will be selected and the JCIMA-P2 will move to 2nd Harmonic interface as shown in **Figure 8-1**.

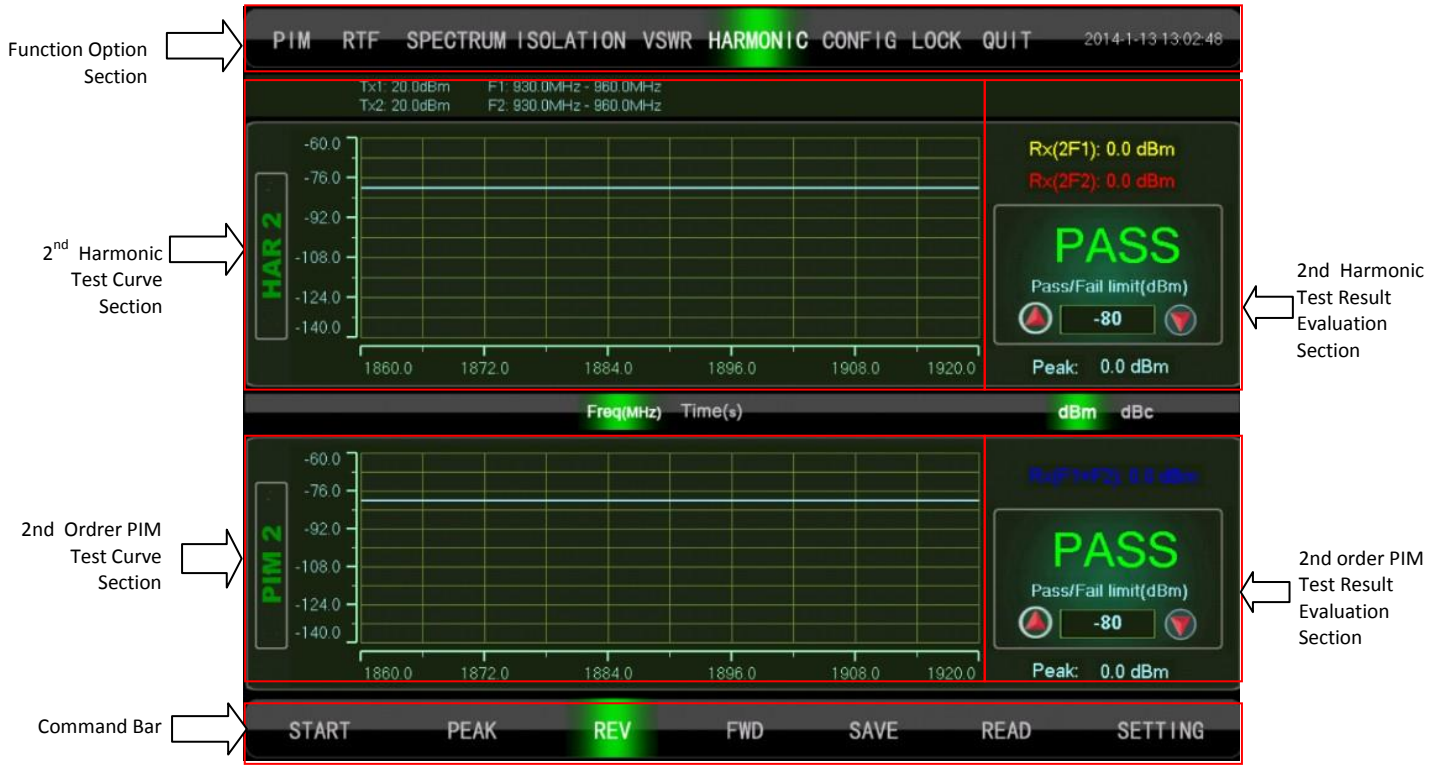


Figure 8-1 Operation Interface of 2nd Harmonic and 2nd order PIM Measurement Function

8.1.1 Function Option Section

Please refer **Chapter** 3.1.1 for Function Option Section.

8.1.2 Test Curve Section

As shown in **Figure 8-2**, the Test Curve Section shows the 2nd Harmonic/PIM2measurement result.

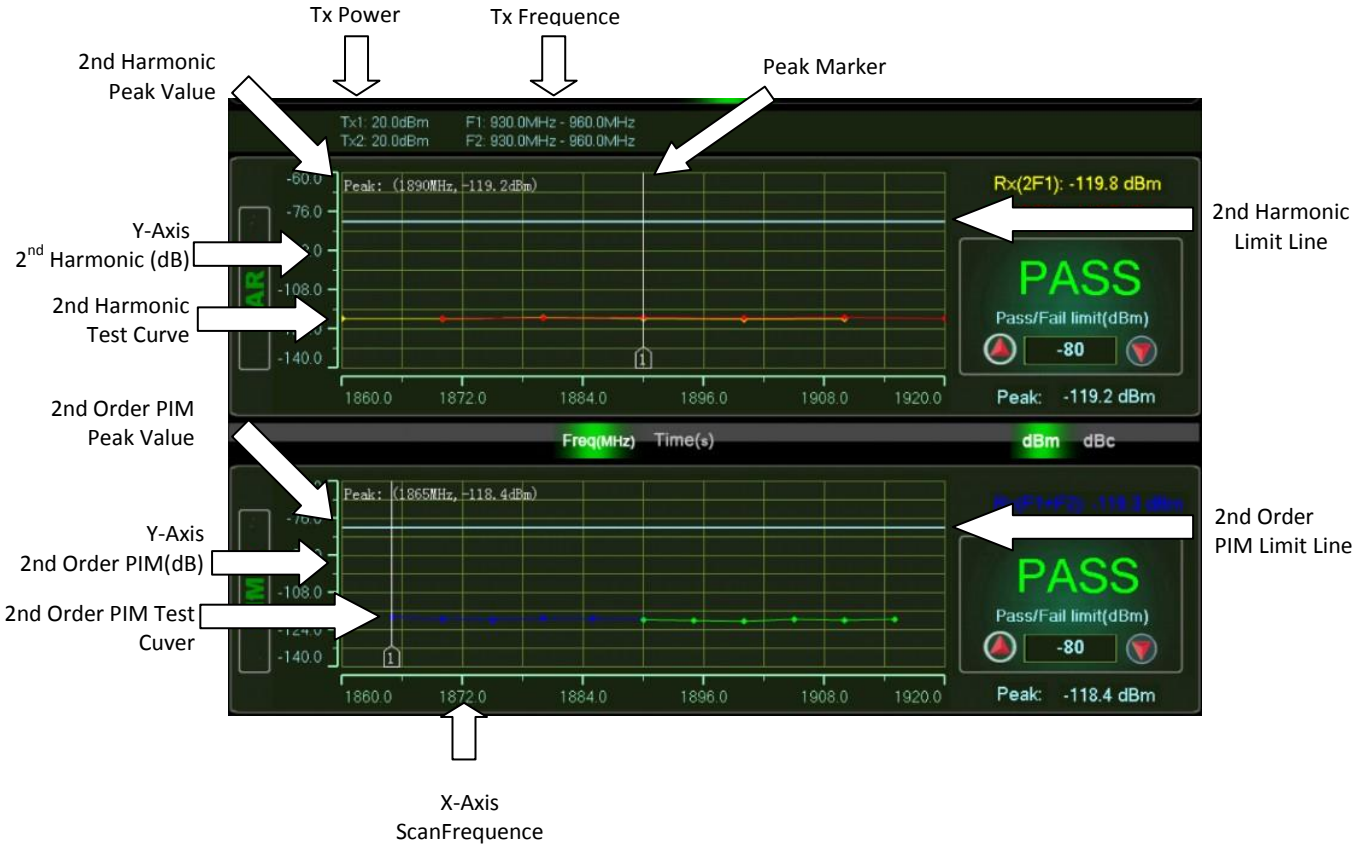


Figure 8-2 2nd Harmonic/2nd Order PIM Measurement Test Curve Section

- ✧ 2nd Harmonic Test Curve: Yellow curve shows the Harmonic measurement result
- ✧ 2nd Pim Test Curve : Yellow curve shows the Pim measurement result
- ✧ Peak Marker: Show the peak point in the curve
- ✧ 2nd Harmonic Peak Value: Show dB value of peak point for 2nd Harmonic
- ✧ PIM2 Peak Value: Show dB value of Peak point for PIM2
- ✧ X-Axis: Frequency
- ✧ Y-Axis 2nd Harmonic (dB) Value of 2nd Harmonic
- ✧ Y-Axis 2nd PIM (dB) Value of 2nd PIM
- ✧ TX Power: Transmission power of the Power Amplifier
- ✧ 2nd Harmonic Limit Line: Line of limit which user uses to evaluate test result
- ✧ 2nd Pim Limit Line: Line of limit which user uses to evaluate test result

8.1.3 Command Bar

Press the softkeys in Command Bar for 2nd Harmonic/2 Order PIM test setup and measurement.

- ✧ START: Start and Stop the 2nd Harmonic measurement
- ✧ PEAK: Mark the Peak test point from the measurement result
- ✧ REV: Reverse 2nd Harmonic and 2nd Order PIM Measurement
- ✧ FWD ： Forward 2nd Harmonic and 2nd Order PIM Measurement
- ✧ SAVE: Save test result
- ✧ READ: Read saved test result
- ✧ Setting: Open the setup window

8.1.4 Test Result Evaluation Section

There are 2 parts in Test Result Evaluation Section, Peak PIM and Pass/Fail Limits and Evaluation.

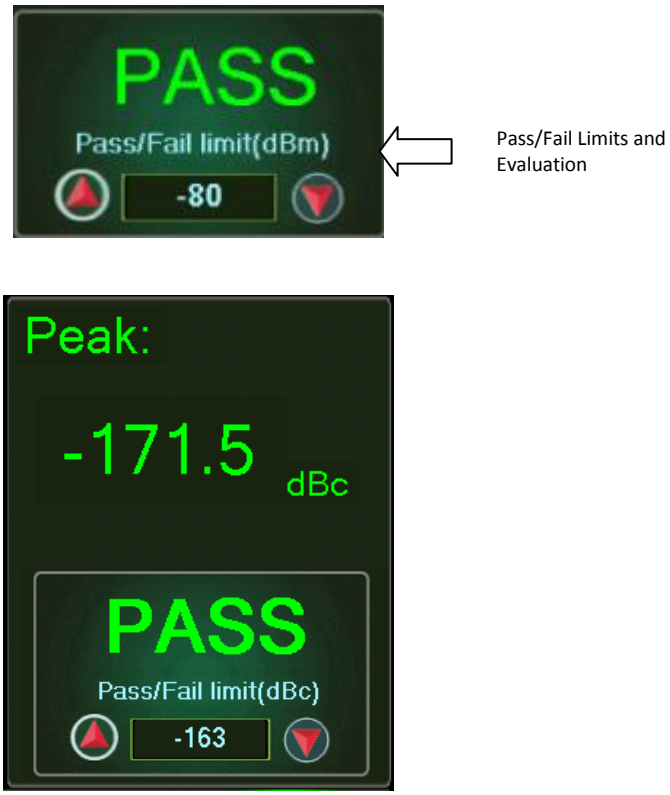
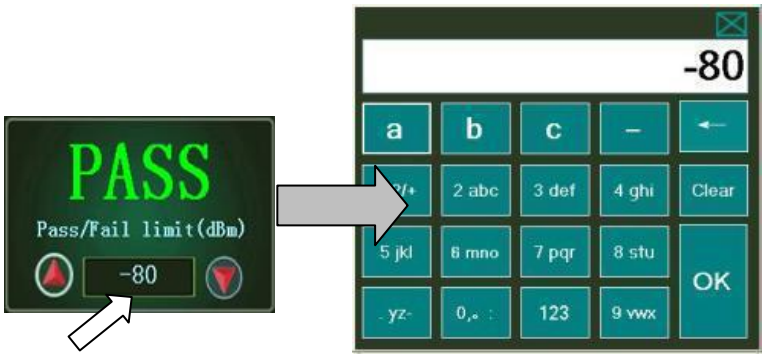


Figure 8-3 2nd Harmonic /2nd PimTest Result Evaluation Section

- ✧ Pass/ Fail Limits and Evaluation: Setup Pass/Fail limit and Provide Pass/Fail Result



8.2 Setup for 2nd Harmonic/ 2nd PIM Measurement

Press the "**SETTING**" softkey in the Command Bar as shown in below.

The "**Setting**" Window as shown in **Figure 3-7** will pop up. The Setting window is for setup of PIM measurement. All standard PIM measurement setup is set as default by manufacture. Press the "**Default**" button in the window to reset all the parameters back to default value.

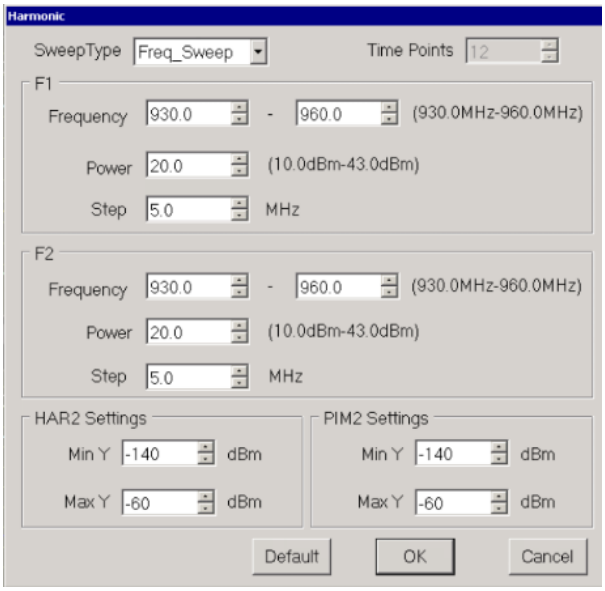


Figure 8-4 Setting Window for 2nd Harmonic/ 2nd PIM Setup

8.2.1 Test Mode Setup

There are 2 test modes, Frequency Sweep and Time Sweep.

8.2.1.1 Frequency Sweep Mode

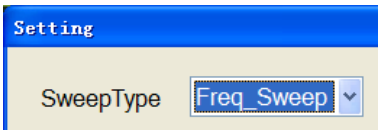
When under Frequency Sweep mode, the PIM Analyzer will sweep 2 RF carriers with defined frequency range and power level and measure the PIM performance.

8.2.1.2 Time Sweep Mode

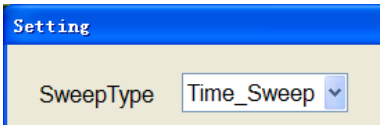
When under Time Sweep mode, the PIM Analyzer will generate fixed RF carrier set by user and perform the PIM measurement by time.

8.2.1.3 Setup Test Mode

In "**Sweep Type**" option of Setting Window, when choosing "Freq_Sweep", the PIM measurement is Frequency Sweep Mode.

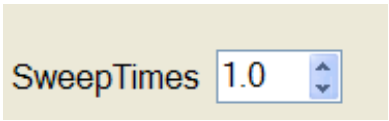


When choosing "**Time_Sweep**", the PIM measurement is set to be Time Sweep Mode.



8.2.2 Sweep Times Setup

In "**Sweep Times**" setup of the Setting Window, user can define the sweep times. More sweep times is chosen, more accurate the PIM measure will. But more sweep time requires longer PIM measurement time. The maximum sweep time is 100 times.



8.2.3 RF Carriers Parameter Setup

As shown in **8-5**, user can setup RF carrier parameters by changing the default Frequency, Power and Step values in **F1** and **F2** setup section.

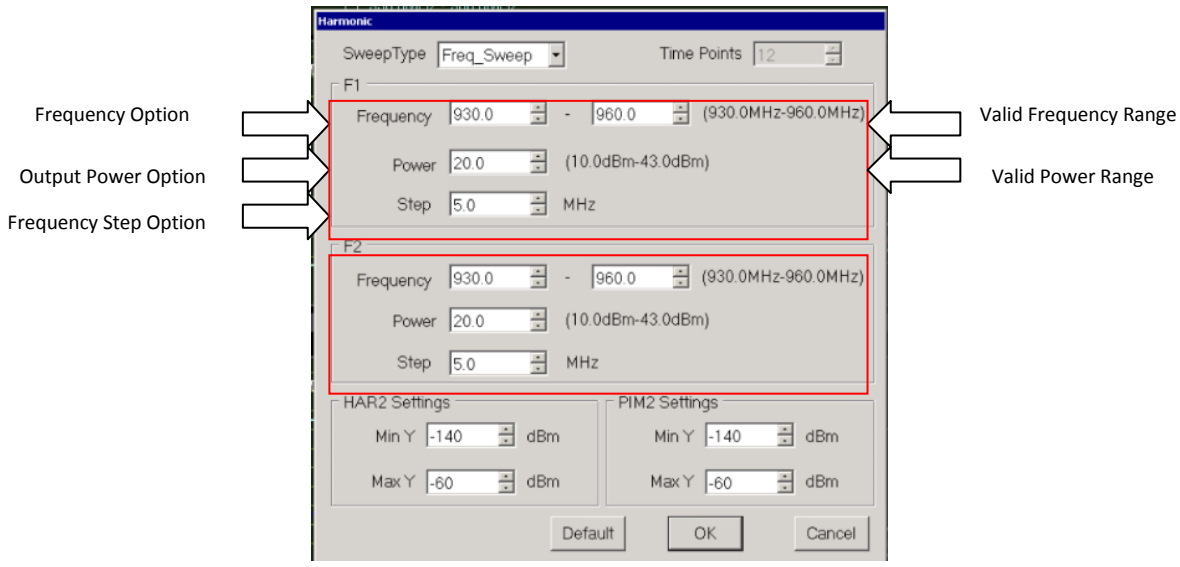


Figure 8-5 RF Carriers Setup Section

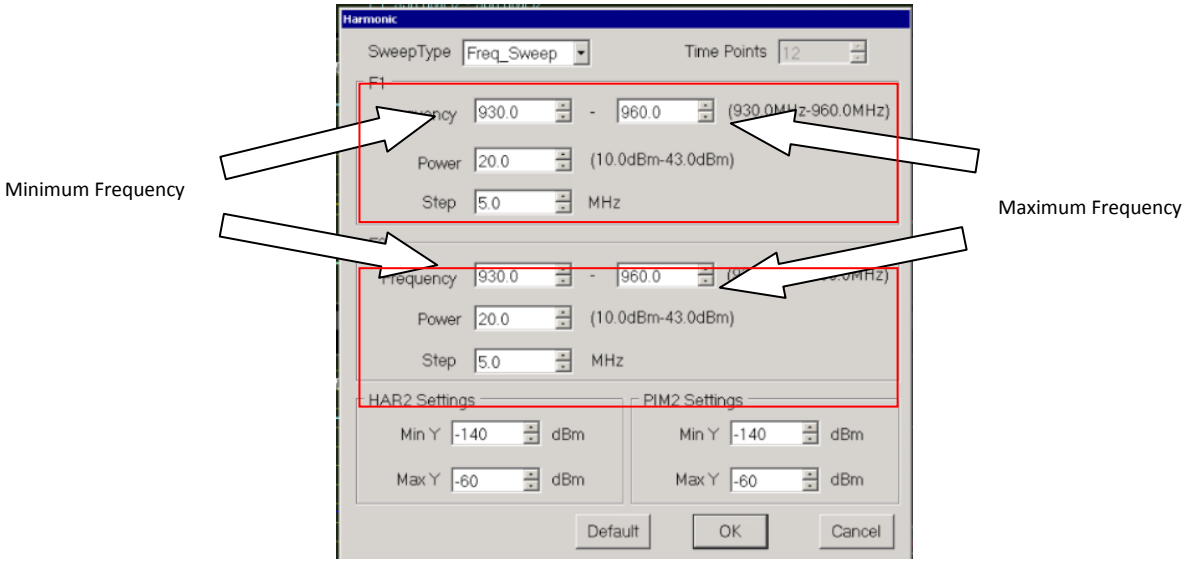
8.2.3.1 Frequencies Setup

User can set the frequency range of each RF carrier by changing the frequency options in **F1** and **F2** Setup Section. Depending on the model of JCIMA-P2, the valid frequency ranges (as shown in **Table 3-1**) are different.

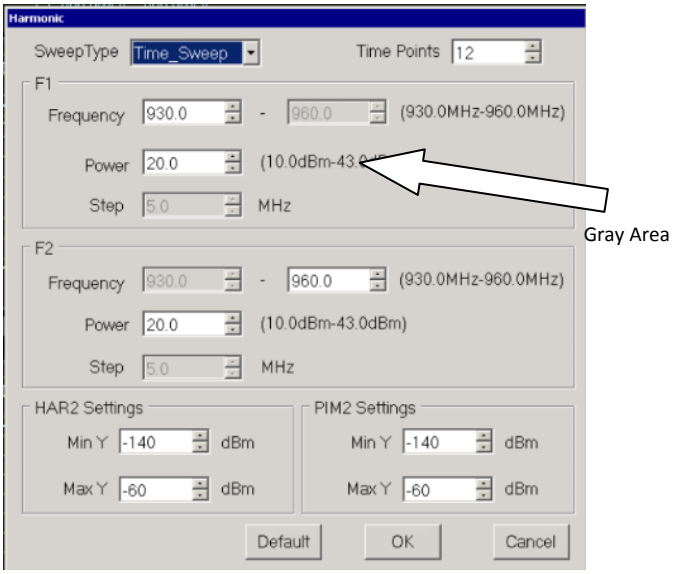
Model Number	Frequency Range (MHz)
JCIMA-850-P2	869 - 894
JCIMA-900-P2	930 - 960

Table 8-1 Valid Frequency Range

- When under Frequency Sweep Mode, Frequency Option for both **F1** and **F2** has the minimum and maximum frequency setup options.



- When under Time Sweep Mode, only Minimum Frequency is available in Frequency Option area (the gray areas are not selectable).



8.2.3.2 Power Setup

In the Output Power Option Section (as shown in **8-5**), user can define customized carrier output power level. The valid output power range is from +10dBm to +43dBm. The minimum power step is 0.1dB.

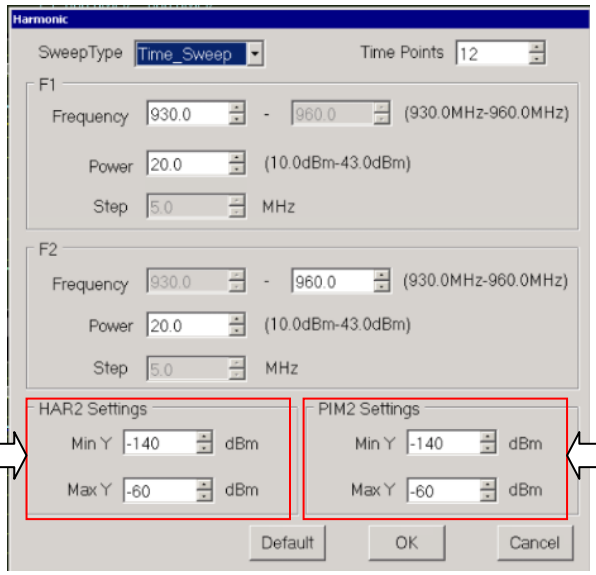
8.2.3.3 Frequency Step Setup

The Frequency Step is used to setup the frequency sweep step when using Frequency Sweep Mode. User can customizes the frequency step via changing the setting in Frequency Step Option Section which is shown in **8-5** The minimum frequency step is 0.1MHz.

When under time sweep mode, this option is not available and the selection area will turn gray.

8.2.3.4 Set up the Max/Min value of Y-axis

The Max/Min value setup for 2nd Harmonic



The Max/Min value setup for 2 Order PIM

Setting the value of Max Y and Min Y to adjust the displayed scale of 2nd Harmonic/ 2 order PIM.

8.3 2nd Harmonic/ 2 Order PIM Measurement

8.3.1 Preparation Before the measurement

- Connect the PIM Analyzer for measurement setup as shown in
- **Figure** 8-**6**.

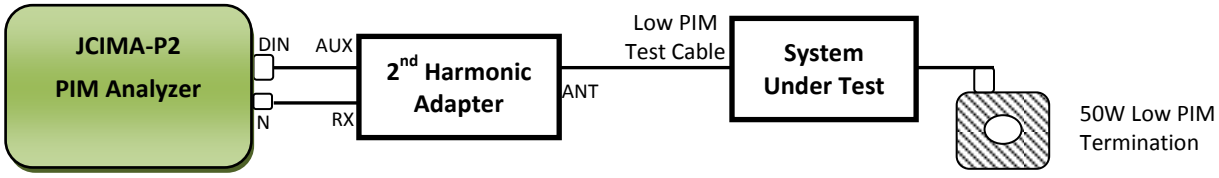


Figure 8-6 Test Setup for 2nd Harmonic/2nd Order PIM Measurement

Please use the torque wrench to ensure the accuracy of measurement results.

Recommended torque: 5N-M for N type connector, 17.5-22N-M for 7/16 type connector.

- When using remote control terminal, please confirm only WiFi LED in PIM Analyzer front panel is on (Red) and the LED screen shows "***1111***".

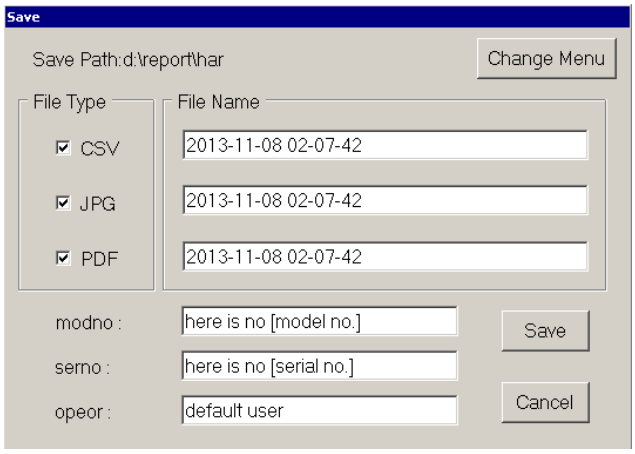
8.3.2 Start and Stop the 2nd Harmonic/ 2 Order PIM Measurement

- Press "**REV**" button in the Command Bar and then press "**START**" button in the Command Bar to start the reverse 2nd Harmonic/ 2 Order PIM measurement.
  - When measurement starts, both "**START**" and "**PEAK**" buttons will turn to green.
  - After measurement completes, the "**START**" and "**PEAK**" buttons will turn back to normal.
- Wait until measurement complete or press "**STOP**" button again to stop the measurement.
- Press "**FWD**" button in the Command Bar and then press "**START**" button in the Command Bar to start the forward 2nd Harmonic/ 2 Order PIM measurement.
  - When measurement starts, both "**START**" and "**PEAK**" buttons will turn to green.
  - After measurement completes, the "**START**" and "**PEAK**" buttons will turn back to normal.
- Wait until measurement complete or press "**STOP**" button again to stop the measurement.

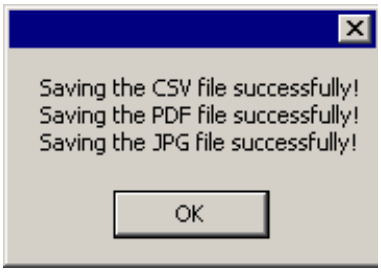
8.3.3 Save and Read the Test Result

8.2.6.1 Save the Test Result

- Press the "**SAVE**" Softkey in Command Bar.
- The save setup window will pop up.

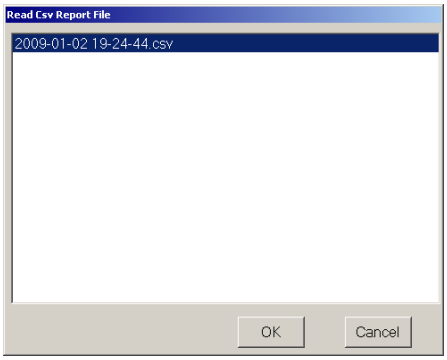


- Choose the file format – can be multiple logs with different formats.
- Specify the file name, model number ("**modno**"), serial number ("**serno**") and the tester's name ("**opeor**").
- Press "**OK**" button to execute "Save" command.
  - The test result will be saved under D:\Report\har with date and time automatically (when using default name).
- After the test result is saved successfully, the follow window will pop up. Press "**OK**" button to quit the window.



8.3.3.1 Read Saved Test Result

- Press the "**READ**" softkey in the Command Bar
- The "Read CSV Report File" window will pop up



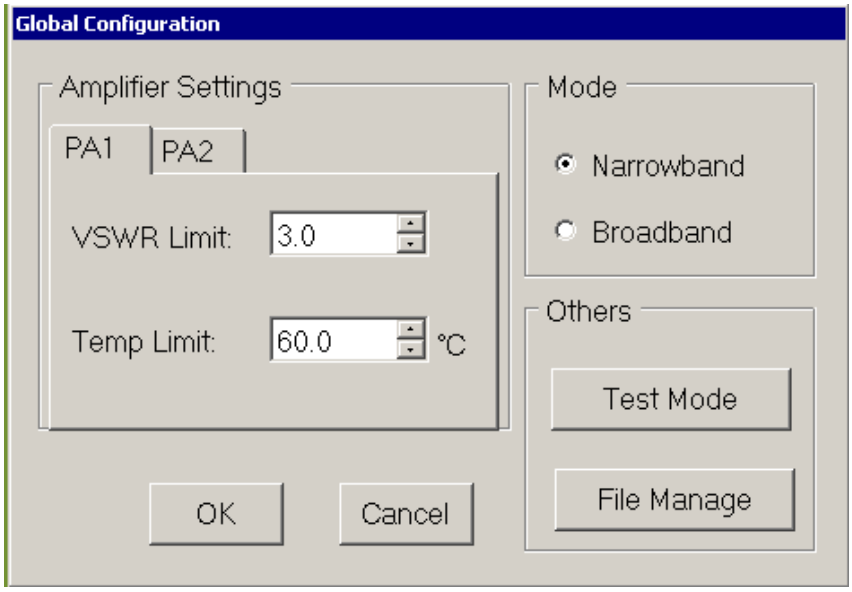
- Select the file and press "**OK**" button to read the saved test result

9. Others (CONFIG & LOCK)

9.1 Configuration Setup

The configuration setup is the general setup for Power Amplifier (PA) alarms, Spectrum Modes, etc.

- Press the "**CONFIG**" softkey in Function Option Section. The **Global Configuration** window will pop up.

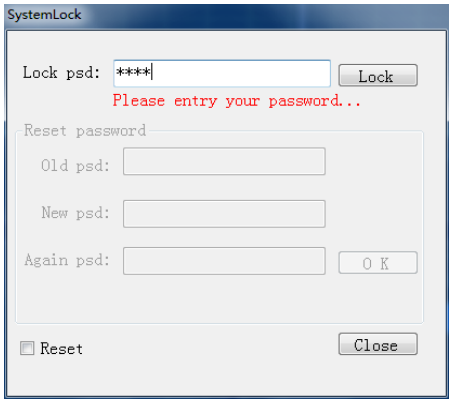


- ✧ PA1 (Tab): Power Amplifier 1
- ✧ PA2 (Tab): Power Amplifier 2
- ✧ VSWR Limit: The VSWR warning threshold for PA. The default value is 2.0
- ✧ Temp Limit: The temperature warning threshold for PA. The default value is 60.0℃
- ✧ Narrowband: Narrow Band mode for Spectrum Measurement
- ✧ Broadband: Broad Band mode for Spectrum Measurement
- ✧ Test Mode: For Manufacture test only
- ✧ File Manage: For test result file management.

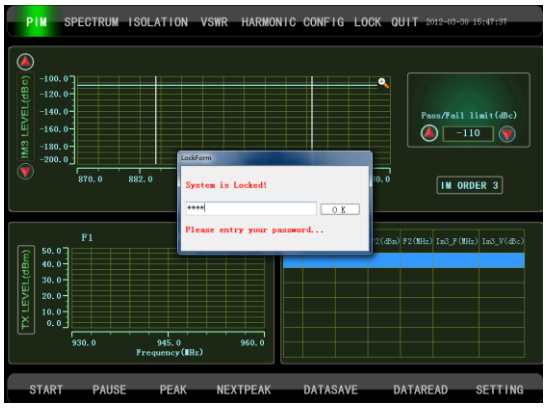
- Press "**OK**" button to save and close the **Global Configuration** Window.

9.2 Screen Lock Function

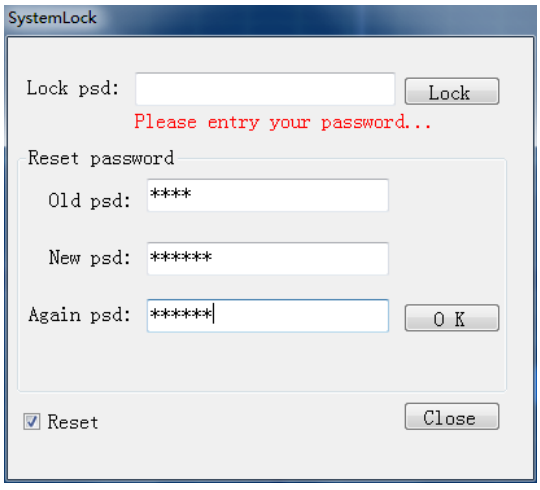
Press the "**LOCK**" softkey in Function Option Section. The System Lock window will pop up for lock screen setup.



- Input the password and then press the "**Lock**" softkey. The test interface will be then under lock state. No softkey will work under this state.
- To deactivate the lock state, input the password again, then press "**OK**" button, returns to the normal.



- To modify the password, select Reset option, input the original password in "**Old psd**", the new password in "**New psd**", repeat the new password in "**Again psd**", and then press "**OK**" button.



- Press the "**Close**" button to exit the dialog.

Appendix A. Product Specifications

Functions	Swept PIM	3rd, 5th, 7th and 9th order reverse intermodulation product when in receive band (user selectable)
	PIM vs. Time	3rd, 5th, 7th and 9th order reverse intermodulation product when in receive band (user selectable)
	Range-to-Fault	Distance and relative magnitude of PIM source
	Spectrum	Broadband Spectrum Measurement (100MHz – 3GHz)
	Swept VSWR	VSWR or Return Loss Measurement for the transmission band (user selectable)
	Swept Isolation	Isolation (or Insertion Loss) Measurement for the transmission band (user selectable)
	Swept 2nd Harmonics	2nd Harmonics Measurement for the transmission band (user selectable)
Power	AC/DC Adapter	Input: 110VAC/220VAC, 50/60 Hz, Output: 48VDC
	Power Consumption	300W
Dimension & Weight	Dimension	408mm x 235mm x 140mm
	Weight	10-12Kg
PIM Measurement	RF Test Power	Two CW tones 10 dBm to 43 dBm, 0.1 dBm steps
	Residual PIM Performance	<-122 dBm, <-125 dBm typical (2x 43 dBm) , <-135 dBm (2x35dBm)
	PIM Measurement Range	-65 dBm to -135 dBm
Spectrum Measurement	Frequency Range	100MHz – 3GHz
	Noise Floor	-135dBm/1KHz(Receiving Band), -120dBm/1KHz (Wide band)
	RBW	1KHz/10KHz/100KHz
	Dynamic Range	70dB
	Attenuation	0/10/20/30/40dB
	Amplitude precision	±1 dB
	Frequency Precision	2ppm

VSWR & Isolation Measurement	Frequency Range	By selected transmission band
	Return Loss Error	±0.5 dB(RL:0-18dB), ±1.5 dB(RL:19-25dB)
	Resolution	0.1dB
Ports	VGA Port	For external display with wired connection
	USB2.0	For external keyboard, mouse, USB flash drives, etc.
	48VDC IN Port	For DC Power supply
	N-Type AUX Port	RF Input port, N type RF port, 50Ω Impedance, -10dBm maximum power handling
	RF IN/OUT Port	7/16 type RF IN/Out port for maximum 2x(10dBm to 43dBm) RF output, 50Ω Impedance

Appendix B. Maintenance and tips

- To avoid RF ports being oxygenated in the air, all RF ports on JCIMA-P2 should be covered with special caps (provided by manufacture) when they are not used.
- All RF connectors shall be cleaned with a lint-free swab and alcohol before they are used. Avoid touching the inner connectors directly, body grease will accelerate tarnishing of the surface of the connector.
- To avoid damaging the RF cable, don't distort the test cable over its minimum bending radius, especially for the joint part between cable and connector.
- When screwing the RF connectors, using the torque wrench provided by manufacturer. Recommended torque: 5N-M for N type connector, 17.5N-M for 7/16 type connector.
- To make the measurement more accurate, when PIM or RTF measurement continuously run more than 5 minutes, please tighten the connector as the joint might be loosed by the heat effect generated during the high power test.
- To protect the 7/16 connector of JCIMA-P2, please use the 7/16F-7/16M adaptor which provided by manufacturer and replace it with a new adaptor regularly.
- The C-drive has been set as write protection, please do not store any test reports and other data under C-drive or desktop, otherwise when the system is rebooted, all stored data will be lost.

Contacts

NORTH AMERICA

TEL: 1-888-728-9443

FAX: 1-416-900-6864

Email: support@acentury.ca

Address: 175 West Beaver Creek Road, Richmond Hill, ON
Canada L4B 3M1

Website: http://www.acentury.ca

P. R. CHINA

TEL: 86-571-87381789

FAX: 86-571-88911556

Address: No. 581, Huoju Avenue, Binjiang District,
Hangzhou,Zhejiang, 310053, China

Website: http://www.jointcom.com